

# POULTRY GUIDE

MONTHLY

MOUTHPIECE OF INDIAN POULTRY INDUSTRY

DECEMBER, 1967  
★ VOL. IV No. 12  
PRICE: Rs. 1.25

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is out-standingly superior in economic gain &  
efficiency to that of Litter Rearing according  
to this author

...

5

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Advantages of the system

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# The Success Story

By  
Michael M. Pannwitz

American Peace Corps Volunteer.

## INTRODUCTION

Mr. E. P. Sukumar started a poultry farm (Vimal Farm) in February 1966. He had neither experience nor knowledge of poultry farming. After collecting information on the business from various sources and discussing every detail thoroughly he was convinced that poultry was worth a trial and we began to plan and execute a 200—bird project.

## HISTORY OF THE FARM

First, 230 day-old sexed chicks were ordered and arrangements were made to get poultry feed. A 17 ft. x 37 ft. thatched poultry house was constructed and ready three weeks before the chicks arrived. Equipment (feeders, waterers, brooders, etc.) was made locally. The chicks arrived on February 15, 1966. They were vaccinated with Ranikhet Fl vaccine and later with Pigeon Pox, Fowl Pox, and Ranikhet Disease vaccines. The chicks were fed chick mash for the first 10 weeks, growers mash from the 11th week to the 22nd week and layers mash after the 22nd week. An egg-contract for up to 2000 eggs per week was made with the Regional Engineering College, Chathamangalam. As the word of Mr.

# Men Behind Them

A N D  
Eggs from desi hens in kerala were flooding all big markets of India—even as far as Delhi. Thus commercial farming was considered to be uneconomical as the eggs from mash-fed farm hens could not compete with eggs obtained free from scavenging hens. The Poultry Guide representative went deep into exploring the whole affair and lo ! the myth has been broken. This is the second success story although of a smaller unit. The pains taken by the so called 'raw' 'new hands' — the American Peace Corps Volunteers—deserve appreciation. None of the farmers our representative met complained of anything against them, but wondered why the Kerala Government refused their free services for the budding industry. The greatest asset the A.P.C. volunteers have given us is the usefulness of keeping records. Two of the volunteers after leaving Kerala have also written a very valuable Technical Guide and excerpts from the same will be published in our future issues for the benefit of our readers.—Ed.

Sukumar's poultry farm spread sales of eggs from the farm itself also increased.

Of the 224 day-old chicks 217 reached the

Poultry Guide

laying stage. The mortality until laying was 17 chicks, or 7%, well below the average figure of 10% mortality. The average number of fowls maintained during the laying year was 194. Of the 69 fowls removed from the flock 11 died from disease and the other 58 were culled and sold for table. The egg-production figures indicate that the culling was done correctly.

On July 16, 1967 the fowls completed one year (52 weeks, total age of 74 weeks) of laying. In that year 45,921 eggs were laid. Average egg-production was 65% or 232 eggs per fowl. Hen-housed production was 58% or 212 eggs per birds. 200 eggs per year per hen housed is considered a good production level.

#### CONCLUSION

Of the various poultry farms started in Calicut since 1965 Mr. Sukumar's farm is one of the most successful. His is probably the first poultry farm in the area that was ever started on commercial and scientific lines. Both the birds and the feed chosen for the farm were of first rate quality, probably the best available in India. Even though they were also the most expensive, the farm turned a profit (see table next page), mainly because a good price was obtained for the eggs. The farm was and is successful because : (1) The best birds available were purchased. (2) The

best feed available was used. (3) A strict management schedule was observed including regular feeding, watering, medication, vaccination, debeaking, sanitation, culling, turning of litter, close observation and record keeping.

None of these points by themselves will make a successful poultry farm, only the



A new flock of A.A. Browns on the Vimal Farm.

combination of all of them. Mr. Sukumar, for whom this first attempt at poultry was only an experiment, is now convinced of the profitability of poultry and in February 1967 expanded his flock by 500 more hybrid birds. He plans to have a 1000 bird farm soon.

Mr. Sukumar has also taken an active interest in the poultry situation in Calicut in general and was one of the founding members of the Kozhikode District Poultry Farmers' Association of which he is now the Secretary.

NOW IS THE TIME  
TO BOOK YOUR NEXT SEASON'S

## Chicken Order

And

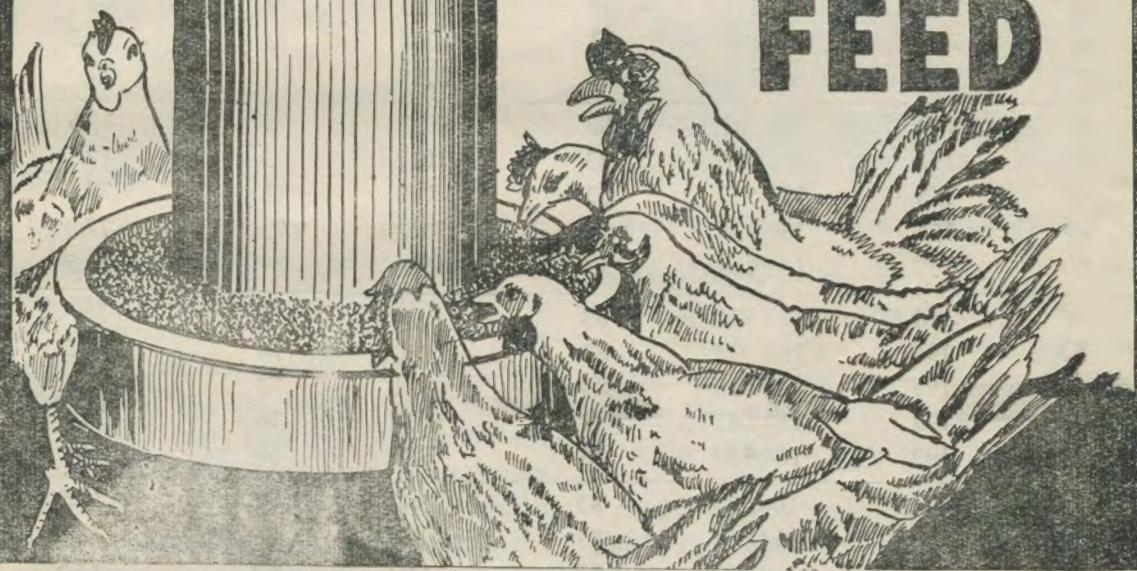
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FEED CONSUMPTION AND EGG PRODUCTION RECORDS OF ARBOR ACRES  
QUEENS. HATCHDATE: February 14, 1966. (Mr. Sukumar, Calicut).

WEEK	FOWLS	FEED	FEED PER 100 FOWLS	EGGS	% PROD.	% IDEAL PROD.
1	2	3	4	5	6	7
1	234	13.128	6			
2	232	25.754	11			
3	231	42.302	20			
4	230	46.292	20			
5	228	50.204	22			
6	225	57.376	26			
7	225	71.720	32			
8	225	83.123	37			
9	225	88.900	40			
10	225	(78.017)	41			
11	225	106.312	46			
12	225	105.764	46			
13	255	103.572	46			
14	225	103.572	46			
15	225	103.572	46			
16	223	103.572	46			
17	222	103.572	47			
18	220	103.572	47			
19	220	106.860	48			
20	218	107.408	49			
21	218	110.148	50	1	0	0
22	217	156.704	70	10	0	0
23	217	(150.570)	70	25	2	6
24	217	153.090	70	94	6	18
25	217	(144.610)	70	277	18	30
26	217	160.770	75	571	39	42
27	217	155.852	75	854	56	54
28	217	153.693	75	1085	71	66
29	217	167.492	75	1130	75	78
30	215	172.285	75	1200	80	84
31	215	176.262	83	1234	82	86
32	214	171.915	83	1208	81	85.5
33	214	172.909	83	1161	78	85

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1	2	3	4	5	9	7
34	214	173.638	83	1166	78	84.5
35	213	175.312	83	1142	76	84
36	212	172.850	83	1108	74	83.5
37	212	172.850	83	1049	71	83
38	211	175.530	83	1078	73	82.5
39	209	169.813	83	1004	69	82
40	209	168.200	83	948	65	81.5
41	207	169.857	83	1043	72	81
42	204	165.744	83	1037	73	80.5
43	200	164.213	83	1038	74	80
44	200	171.171	83	1006	72	79.5
45	199	167.725	83	1015	73	79
46	199	168.161	83	1028	74	78.5
47	198	163.290	83	1012	73	78
48	198	172.500	83	998	72	77.5
49	198	159.834	83	1002	72	77
50	198	163.984	83	1016	73	76.5
51	198	163.594	83	1026	75	76
52	194	158.999	83	998	74	74.5
53	193	158.895	83	971	72	75
54	192	157.042	83	1028	76	74.5
55	192	164.350	83	931	69	74
56	191	160.716	83	942	70	73.5
57	191	164.604	83	883	66	73
58	189	160.597	83	907	69	72.5
59	187	159.514	83	852	65	72
60	186	152.018	83	854	65	71.5
61	182	150.190	83	868	68	71
62	182	148.344	83	783	62	70.5
63	179	148.182	83	784	63	70
64	175	136.320	83	774	63	69.5
65	172	139.203	83	770	64	69
66	168	146.606	83	722	61	68
67	166	136.574	83	733	63	67
68	166	135.269	83	676	58	66
69	164	131.288	83	668	58	65
70	161	132.698	83	686	61	64

1	2	3	4	5	6	7
71	159	130.384	83	652	59	63
72	154	127.967	83	622	57	62
73	150	127.372	83	625	60	61
74	148	123.340	83	626	60	60

Average weekly feed consumption (corrected for 100 fowls) during laying period (from 32nd week, when laying normalizes to 74th week) is 82.6 kg.

In the above TABLE, column 1 shows the age of the flock in weeks; column 2 the average number of fowls per week; column 3 the total feed consumed per week in kg; column 4 the feed per 100 fowls corrected for variations and rounded off; column 5 the total number of eggs per week; column 6 the actual level of egg production in percent; column 7 the percentage egg-production under ideal conditions.

#### EXPENSES, INCOME AND PROFIT OF E.P. SUKUMAR'S POULTRY FARM

##### EXPENSES

##### INCOME

House, Rs. 1100, depreciate over 4½ years	... 367	Eggs (45,921 at 23 p./egg) ... 10562
Equipments (feeders, waterers, brooders, nest)	... 265	Birds (200 at Rs. 6/bird) ... 1200
Sawdust (litter)	... 125	Litter (at Rs. 3 per bag) ... 300
Medicine	... 400	Feed Bags (143 at Re. 1/bag) 143
Vaccine	... 30	
*Vaccination labour	... 40	
*Debeaking, labour	... 20	
Electricity, water, and miscellaneous	... 100	
*Labour, 18 months at Rs. 20/month	... 360	
230 day-old chicks	... 700	
Chick mash (577 kg. at 78 p/kg.)	... 434	
Growers mash (1158 kg. at 69 p/kg.)	... 799	
Layers mash (8322 kg. at 74 p/kg.)	... 6158	
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		Rs. 12205

Total Profit : Rs. 2407

Profit on the total investment in percent is 24½ %.

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# POULTRY GUIDE

MONTHLY

MOUTHPIECE OF INDIAN POULTRY INDUSTRY

NOVEMBER, 1967



VOL. IV No. 11



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# **POULTRY GUIDE**

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(PREM NAGAR) NEW DELHI-3

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No. PS/MS/67-5087  
MINISTER OF STATE FOR FOOD & AGRICULTURE,  
GOVERNMENT OF INDIA.

NEW DELHI-1.

18th October, 1967.

#### M E S S A G E

I am glad to know that the "Poultry Guide" has served the poultry industry for the last three years and will be entering the fourth year of its publication in November, 1967.

The poultry extension journals like the "Poultry Guide" have a vital role to play in conveying the latest results of experimentation and research to the farmers to enable them to improve their operation of protein rich food in the country and I have no doubt that the "Poultry Guide" will continue to assist the farmers in producing eggs and poultry in ever increasing numbers.

I wish the journal all success.

Annasaheb P. Shinde

## REARING SCHEDULE

By

Richard Masterson & Michael M. Pannwitz  
(American Peace Corps Volunteers)

*This is the first of a series of articles which will be reproduced every month. These were written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India.—Ed.*

There are two important points to keep in mind, (1) plan ahead, (2) when changing procedure on the birds do it gradually.

Three weeks before the arrival of the chicks the poultry house should be completed. Everything else must be ready. Three days before they come make sure you have the following ready :

1. Brooder and brooder guard (test the brooder).
2. Feed, feeders, waterers (test the waterers, they should not lock).

Age Upon arrival of chicks :

1 day

1. Give Vitamin A fortified feed and medicated water immediately. The feed is given in chick feeders (full, and on plates so that chicks can walk on the feed and find it immediately).
2. Observe chicks closely and frequently, also at night. Look under the brooder daily. Is the brooder temperature correct ? Have they found feed and water ?
3. Destroy obviously disabled or weak chicks.

2 days

1. Replace newspapers covering the litter every day.
2. keep watching the chicks very closely.

3 days

1. Remove half of the plates containing feed (Not the feeders).

4 days

1. Remove the newspapers covering the litter. Chicks will now be able to tell the difference between feed and the litter and will not eat the litter.

5 days 1. Ranikhet Fl vaccination should have been done by now.  
2. Start turning the litter, do it daily.

7 days 1. Decrease brooding temperature by removing a light bulb or by hanging the brooder higher off the ground or by putting smaller wattage bulbs.  
2. Increase floor area by expanding the brooder guard.  
3. Hang the feeders so they are just off the litter.

2 weeks 1. Pigeon Pox vaccination should be done.  
2. Decrease brooding temperature.  
3. Increase floor area by again making the circle of the brooder guard larger.  
4. Start giving shellgrit. Give it in separate containers.  
5. Raise feeders. Check feeder height (lip of feeder must be at the same height as the back of the birds.)  
6. Debeak, but only if necessary.

3 weeks 1. Raise waterers by putting bricks underneath them.  
2. Discontinue medicated water but continue to give vitamin A in the feed.

3 to 4 weeks Gradually remove brooder. Leave it on only during the cooler part of the day and then remove it completely.

4 weeks 1. Brooder should be removed completely.  
2. Increase number of waterers and feeders.  
3. Increase floor area.

5 weeks 1. Deworm birds 10 days before Fowl Pox vaccination.  
2. Give medicated water (anti-stress medicine) 3 days before and 3 days after actual vaccination.  
3. Replace chick waterers with larger grower stage waterers. Raise them. Make the changeover gradually.  
4. Give chicks the full house but round off the corners with bamboo matting or cardboard for another 2 weeks.

6 weeks 1. Give Fowl Pox vaccination.  
2. Continue medicated water for 3 days after vaccination.

7 weeks 1. Remove matting or cardboard used to round off the corners.  
2. Gradually change over to adult feeders.

8 weeks 1. By now you should debeak the birds even if it was not necessary before this time.  
2. Give antistress medicine in the water 3 days before and 3 days after-wards.

10 weeks 1. Change over to Growers Mash gradually. Put grower Mash in half the feeders and Chick Mash in half.  
2. Add more litter so to it becomes six inches deep.

11 weeks 1. Deworm in preparation for Ranikhet Disease Vaccination 10 days before the vaccination.  
2. Give medicated water (anti-stress) for 3 days before and 3 days afterwards.

12 weeks 1. Ranikhet Disease vaccination.  
2. Continue to give medicater (anti-stress) for 3 days after the vaccination.  
3. If you have a flock of unsexed chicks, sell all the cockerels now. (IMMEDIATELY)  
4. Remove all obvious culs.

13-14 weeks 1. Change over to adult waterers.

15 weeks 1. Deworm : From now on deworm once every month.

18 weeks 1. Place nests in the house (open them at 6-30 AM and close them at 6 PM)

18-22 weeks 1. Increase the litter to 8 inches depth.  
2. Start giving greens.

22-24 weeks 1. Change to layers mash as fowls begin production.  
2. Start lighting programme (14-hour day)

22 weeks Start keeping egg production records as fowls begin to lay. Record daily egg production and number of birds.

31 weeks Fowls reach peak production. From this week onwards expect a slow decline in the egg production.

32 weeks Order replacement stock now.

35 weeks Cull obvious non-layers.

49 weeks Be ready for arrival of replacement stock in a new house. The new cycle will start in 3 weeks. In this manner you will have continuous laying.

52 weeks 1. Replacement stock arrives (Repeat the same procedure with the new stock as you have been doing with this flock.)  
2. Thoroughly cull the laying flock.  
3. Change the litter and sell or use for manure.  
4. Put 6 inches of new, dried, litter.



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52-74 weeks Continue to cull birds as non-layers become apparent.

58 weeks Order new batch of chicks. This batch will be raised in the house that will be vacated by the first flock when it reaches 74 weeks. The new flock should be started 4 weeks after the orginal flock has been disposed of.

74 weeks 1. Replacement stock that you received at the 52nd week starts producing eggs.  
2. Start disposing of the original flock. Sell those that seem to be the poorer layers first.

74-78 weeks Prepare for the arrival of the flock. (Ordered at 58 weeks).

78 weeks New (third) flock arrives.

---

IN THE NEXT ISSUE — GENERAL MANAGEMENT

---

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MONTHLY

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DECEMBER, 1967



VOL. IV No. 12



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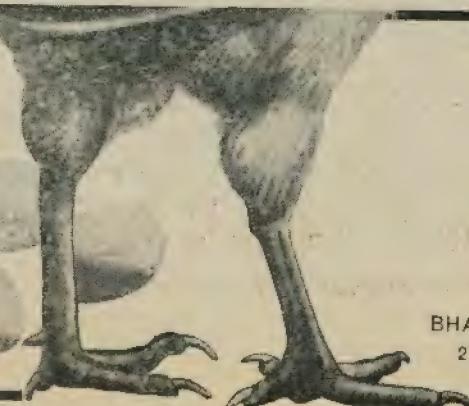
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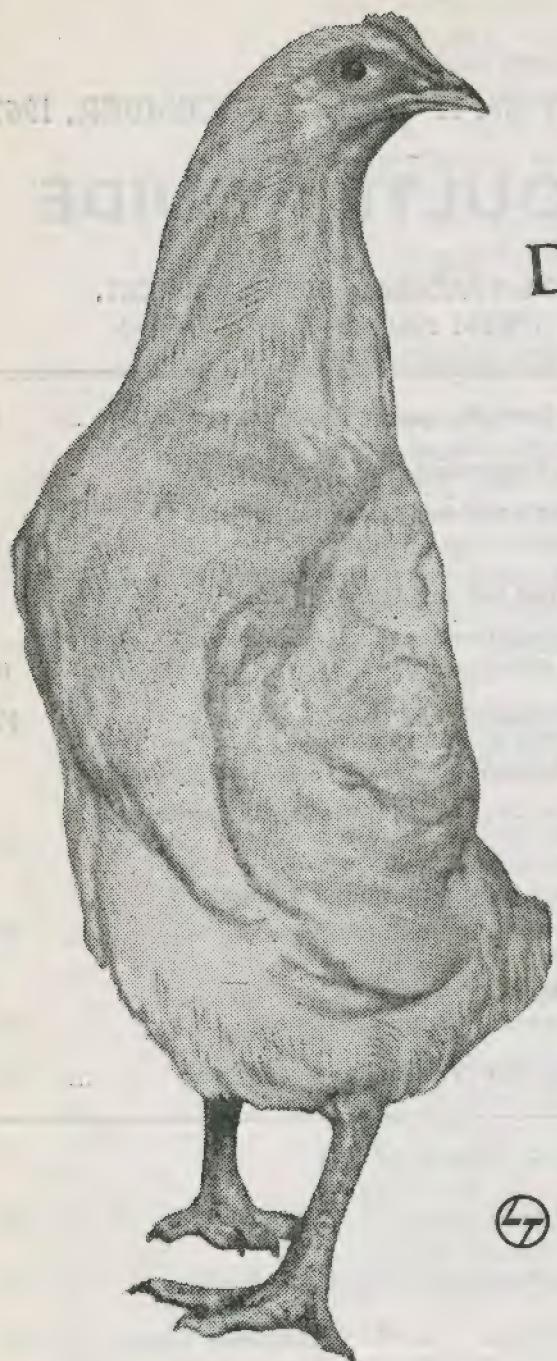
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## REARING SCHEDULE

By

Richard Masterson & Michael M. Pannwitz  
(American Peace Corps Volunteers)

*This is the second of a series of articles which are being reproduced every month. These were written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India.—Ed.*

## GENERAL MANAGEMENT

VARIOUS points of managing flocks are more fully dealt with in this section. Included also, are descriptions of procedures, standards, and requirements of flocks.

### Daily Routine :

- 1.) Give feed and water and collect eggs four times a day.
- 2.) Give greens.
- 3.) Check shellgrit and replenish if necessary.
- 4.) Turn the litter. Remove caked or wet litter. Check the nest material when collecting eggs. Clean all waterers. Adjust hanging feeders and clean dirty feed troughs.
- 5.) Clean the disinfectant pan and fill it with fresh disinfectant solution.
- 6.) Open the nests at 6 A.M. and close them at 6-30 P.M.
- 7.) Observe the birds closely, watching for culls, external parasites, unusual droppings and injured or sick birds.
- 8.) Give a 14-hour day to layers.

9.) Check all equipment for proper functioning. Clean away cobwebs, especially from the wire net because cobwebs impede the flow of air.

10.) Check the house in general. Any leaks in the roof in the rainy season? Any breaks in the wire netting? Other repairs? Any signs of rats in the house? Are the lights clean along with their reflectors?

11.) Keep complete records on egg production, feed consumption, mortality, and unusual conditions.

### Feeders and Feed Consumption

Start with 1 inch of feeder space per bird, increase to 2 inches per bird in the second week, to 4 inches by 10 weeks and to 5-6 inches for adult birds. Observing birds is more important than following these specifications. If the birds are crowding at the feeders even if the correct feeder space is supplied, increase the feeding space.

Hang the feeders; the lip of the feed trough must be at the height of the birds back. Check the height frequently because the correct

height will reduce feed wastage. Have feed available to the fowls at ALL times, but never fill the feeders more than half full. Feed at least 3 times a day using a scoop that prevents wastage when filling the feeders. Do not use your hands. Also clean the feeders regularly of any litter that may accumulate.

The table below indicates what percentage of feed is wasted if the feeders are more than half full.

Breed	Depth of feed in the feed-hopper			
	Full	2/3 Full	½ Full	1/3 Full
Light	45%	15%	4.9%	2%
Heavy	29%	7.5%	2.1%	1.3%

For day-old chicks provide several shallow plates or eggflats filled with feed for the first few days. This is in addition to the chick feeders. The plates with feed are given so the chicks can find the feed immediately. Put some of the feeders particularly under the brooder but gradually move the feeders out from under the brooder. On an average 100 fowls will eat a total of 260 kgs of chick mash; 750 kgs. of grower mash; and 5300 kgs. of layer mash in

one year of laying.

#### Waterers and Water Consumption

Upto 14 weeks of age provide  $\frac{1}{2}$  inch of watering space per bird. After 14 weeks increase it to 3/4ths of an inch per bird. These are the requirements when round pans are used. For trough type waterers allow 3/4 inch per bird up to 14 weeks and thereafter 1 inch per bird. Space waterers in the house so that the fowls never have to walk more than 10 feet from waterer to feeder.

Farmers in Malabar typically use 15 inch diameter and 6 inch deep plastic water pans over a drainage pit and fitted with a guard so that the birds cannot get into the water or roost over top of it contaminating it with their dropping. One of these is enough for up to 75 layers; two for 75-150; three for 150-225; etc.

The water consumption increases greatly in hot weather. Unless the birds have plenty of water available at all times they cannot eat properly and consequently do not lay well. The water consumption of birds is about twice that of feed consumption. Birds drink about 15-40 times a day.

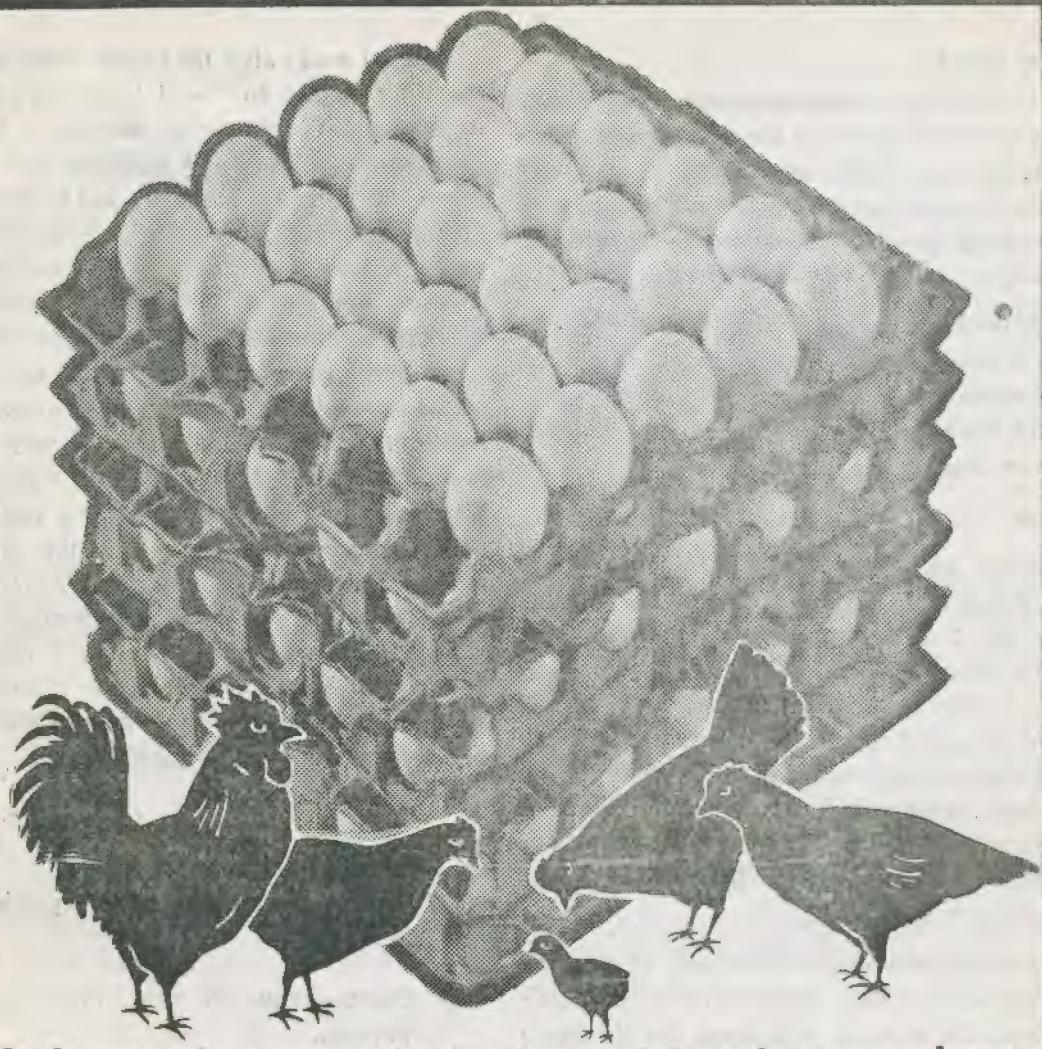
#### DAILY WATER CONSUMPTION OF 100 BIRDS :

##### WEEK LITRES

1	2
2	3.5
3	5.5
4	7
5	9
6	11
7	13
8	15
9	17
10	19
11	21
12	23
13	25
14	27
15	29

It is important to know the daily water intake of fowls because many medicines are given in the water. The farmer can calculate from the chart and from instructions supplied with water soluble medicines how much medicine is required to treat a certain number of fowls, helping to take the guess work out of medication.

16 Weeks and after the daily intake is 29 litres per 100 birds.  
Clean and disinfect all waterers daily.



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## Floor Space

Day-old chicks need a minimum of  $\frac{1}{2}$  square foot per chick. Increase the floor space gradually to 1 square foot by 6 weeks of age and to the full area not later than the 12th week of age. (Full area : 2 square feet for light breed and  $2\frac{1}{2}$  square feet for heavy breed.)

If the birds appear crowded even when allowed the proper area according to the above recommendations give them more space. Look at the birds and their comfort as an indicator to how much space they need.

## Litter

Litter can be composed of various materials. Whatever the material, it must be absolutely dry, free of sharp splinters lightweight and free of dust. Materials most commonly used in Malabar are wood-shavings, rice husk, sawdust and bagasse. Of these four, wood-shavings and bagasse are the best, followed by ricehusk; sawdust being the least desirable. In some areas (Calicut) nothing but sawdust is available but with proper litter management results have been good.

For day-old chicks 3 inches of litter is enough to start with. Be careful with sawdust : it must be covered with paper for the first 3 days, otherwise the chicks might eat it. The depth of the litter should be increased slowly to 8 inches by the time the fowls start laying.

When sawdust is used it must be turned daily ; with other materials that cake or pack less, once or twice a week should be enough. The turning serves to mix the fowl's droppings into the litter and keeps the litter loose and dry.

Several weeks after the chicks have arrived the litter begins to "work", especially if it is turned daily. The droppings decompose in the litter, generating heat and ammonia gas. This serves to keep the litter dry and by doing so kills worm eggs and coccidiosis oocysts, both of which require warm, humid, surroundings for survival, but die in hot, dry, surroundings. Similarly flies cannot breed in the litter so that there should never be a fly problem around a deep-litter unit. The "working" or composting action of the litter will also make a very good natural fertilizer. Litter, to make a good fertilizer must stay in a poultry house a minimum of 8 months and a year is best if the litter is at the correct depth. Litter used as fertilizer means extra profit to the farmer, because there is a high demand for this material. It has been shown that 40 birds produce 1 ton of litter per year, enough to fertilize 1 acre of paddy or half an acre of vegetable garden.

Some more points to consider in litter management.

- (1) Remove any mouldy or wet patches of litter.
- (2) Check frequently wet litter around waterers.
- (3) Remove caked litter.
- (4) Damp litter tends to stick to the toes of the birds, forming large, hard balls, which make it difficult for the birds to walk. Keep the litter dry.
- (5) Remove litter after 1 year and replace with 6 inches of fresh, dry litter material.

(To be Continued in Next Issue)



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MONTHLY

MOUTHPIECE OF INDIAN POULTRY INDUSTRY

JANUARY, 1968



VOL. V — No. 1



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20, TYAG RAJ NAGAR MARKET,  
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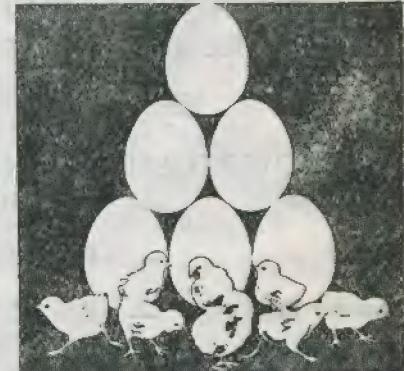
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## FOR THE BEGINNER—III

By

**Richard Masterson & Michael M. Pannwitz**  
(American Peace Corps Volunteers)

*This is the third of a series of articles which are being published every month. These were written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India.—Ed.*

## GENERAL MANAGEMENT

*[Continued From The Last Instalment]*

### NESTS

Provide one nest for every 5 fowls. Nests should be raised  $1\frac{1}{2}$  feet off the ground, should be closable to prevent fowls from roosting in them at night and should be placed in the darkest and coolest part of the house. To discourage fowls from sitting on top of the nest they should be constructed with a very steep roof or even with vertical extension of wirenet from the top of the nest to the ceiling or roof.

A layer of nesting material is used in each nest. Do not use sawdust, it will stick to the eggs (eggs are slightly wet when laid) and make it difficult to clean the eggs. Straw is also not recommended because the birds tend to throw it out of the nest and play with it. We believe paddy husk (cleaned and dried) to be the best nesting material. It sticks to the egg only slightly and is easily wiped off. The nesting material should be checked frequently, replaced whenever dirty, and kept at a depth of  $2\frac{1}{2}$  inches in the nest.

### LIGHTS AND LIGHTING PROGRAMME

For every 100 fowls (200 square feet of floor area) provide one 60 watt light bulb.

For most effective lighting use a good reflector, hang the light 7 feet above the litter, and keep the bulb and reflector clean.

During the early brooding stage brooder lights (but no other lights) are kept burning. Chicks are attracted to red light, therefore paint the brooder bulbs red. In the latter part of the brooding stage switch on the lights only at night. No light is necessary during the Grower Stage and should not be used because it can have a bad effect on birds' egg production later.

As soon as the fowls start laying give them a constant 14 hour day. When daylight is less than 14 hours provide artificial light to give a full 14 hour day. In Malabar where days and evenings are very hot it is best to provide this extra light in the early morning before the sun comes up. This is the coolest part of the day. The birds will eat better in the cooler part of the day and therefore feed intake will be higher and egg production better.

Never increase or decrease the hours of light once a certain length of day has been fixed.

## DAY-OLD VERSUS STARTED PULLETS

Commercial hatcheries in India supply only day-old chicks and therefore the question of started pullets does't arise. If the farmer gets his fowls from such a hatchery.

The state government hatcheries in Kerala, however do supply both day-old chicks and started pullets. If a farmer buys his stock from government farms we strongly recommend that he buy day-old chicks only, and if at all possible sexed, day-old chicks.

Farmers in the Calicut area have had 3% higher mortality with started (3 month old) pullets than with day-old chicks. This 30% figure is actually very high because the started

pullets should have passed the high mortality stage. It was also found that flocks reared from day-old chicks started to lay sooner and gave better egg production than flocks begun with started pullets.

## CULLING

Culling is the removal of injured, diseased and unproductive birds. Culls contribute nothing to the success of your poultry business since they eat as much as good layers but do not give the farmer any profit.

The farmer must realize the importance of culling to an economically run poultry business.

### CULLING CHART

Part of Body	Good Layers	Bad Layers
Comb, wattles	Large; red, waxy	Small, pale, dry coarse texture
Pubic bones	Thin, pliable, 2 or more finger apart.	Thickened, less than 2 fingers
Abdomen	Full, soft pliable, Distance from pubic bones to tip of keel bone is 3 fingers.	Shrunken, hard. Distance from pubic bones to tip of keel bone is less than 3 fingers.
Vent	Large, moist, white.	Small, dry, puckered, yellow.
Pigmentation	Bleached shanks, beak eye, ear lobe, vent.	Yellow pigment in shanks, beak, eye ring, ear lobe, vent.
Feathers	Old, soiled, broken feathers. Dirty look- ing bird.	Smooth, clear, feathers, neat looking.
Body size, general condition	surprisingly heavy, when picked up, vigorous.	very light when picked up, lacking vigour.

## ORDERING BIRDS

Hybrid, day-old, sexed chicks must be ordered at least 5 months in advance because all hatcheries producing such birds are heavily booked. When purchasing, order for 15% extra. This is to make allowances for mortality up to laying time. Most hatcheries will also give 2% extra chicks to make allowance for sexing errors and death in transit.

The best time of the year to start a flock is in November or early December, so that the birds start to lay at the beginning of the season when egg prices are high. June to January prices are the highest while egg prices drop from February through May.

Day-old, purebred white Leghorn chicks are also available from the government poultry farms. Only straight run chicks are available. Results with these chicks have been poor. In the future a new strain of pure bred white Leghorn chicks of better quality will be available from the government farms. (February 1968.) It is strongly recommended however, that farmers who wish to purchase these chicks should make thorough enquiries about their quality before starting a farm with them. This new variety of White Leghorn is now available from the Central Hatchery in Chenngannur. Sexed chicks on a limited scale are also available from Chenngannur.

## GETTING READY FOR THE ARRIVAL OF DAY-OLD CHICKS

Three weeks before the chicks arrive, the poultry house should be completed. Three days before chicks are expected the following arrangements should have been made:—

( 1 ) **Housing**—completely dry, clean, and disinfected.

( 2 ) **Brooder**—Ready and tested; should be switched on ( if electric ) or fired up ( if

kerosene lamp is used ) 24 hrs. before the chicks arrive.

( 3 ) **Litter**—Thoroughly dried, clean litter covered with newspaper so that the chicks don't eat the litter.

( 4 ) **Brooder guard**—a 2 ft. high brooder guard of bamboo matting should be placed around the brooder, 2 to 3 ft. from the brooder. The brooder guard must be expandable so that more floor area can be given to the chicks they grow.

( 5 ) **Vaccine**—Ranikhet F-1 vaccine should have been ordered and the local veterinarian informed of the vaccination date well in advance.

( 6 ) **Feed** should have been purchased by now. Chick Mash is to be used for the first 10 weeks of the birds life.

( 7 ) **Medicine** must be on hand. Poultry Formula ( or another water soluble antibiotic ) is to be given to the fowls in the water for the first 3 weeks of their life to give them a good start. A sulfadrug ( Sulmet, Embazin, etc. or Bifuran ) must be on hand also, in case the chicks suffer from an early attack of coccidiosis. In case of coccidiosis, immediate medication is essential to avoid high mortality.

( 8 ) **Vitamin A**, either in the form of Univax or a feed supplement such as Rovimix-A must be given to the chicks from the first day onwards, through the 10th week.

( 9 ) **Feeders and waterers** must be ready. So the chicks will find the feed quickly, give it on shallow plates or on eggflats along with the chick feeders for the first 3 days. Place the feed near and under the brooder at first.

( 10 ) **Newspapers**—Have a good supply of newspapers ready. The litter ( especially if sawdust ) must be kept covered for the first

few days. Chicks are not able to tell the difference between sawdust and feed and will die if they eat the sawdust.

( 11 ) Phenol for use in the disinfectant pan must be available. Sanitations and conscientious use of the disinfectant pan is essential.

### BROODING

Chicks have a poor temperature regulating mechanism and need to learn how to maintain a constant body temperature. For the first few weeks of their life they have to rely on outside sources of heat to stay warm. A brooder for this purpose is provided for them. Usually brooders are nothing but simple bamboo cane baskets of 3 feet diameter and 1 foot depth. The basket is fitted with lightbulbs, then inverted and hung about twice a chick's height above the litter so the chicks can freely walk under it. Suspending the brooder allows one to raise and lower it as required for temperature adjustment and also to raise it as the chicks grow. Sometimes brooders are supported by stones on the floor. The disadvantages of this are that brooder height is difficult to adjust, the chicks tend to roost on the stones leaving their droppings for other chicks to pick at and undesirable insects usually breed under the stones. We DO NOT recommend

brooder to rest on the floor supported by stones, but find it much better in all respects to suspend the brooders.

No specific temperature ranges for brooding are given here because we find it much more reliable and easy to use the chick as an indicator as to whether the brooding temperature is correct. If the brooding temperature is correct the chicks will be quiet and evenly distributed in the brooding area; some under the brooder and some not. If the brooding temperature is too low the chicks will chirp shrilly and loudly and will all be huddled under the brooder. If the temperature is too high only a few chicks will be under the brooder and rest will be huddled together away from the brooder.

When changing brooding temperature do it gradually. At 3 to 4 weeks of age the brooder should be gradually removed giving the chicks a chance to slowly "harden up" and get along on their own.

For a 3 ft. diameter brooder provide three 60 watt bulbs. This brooder is good for up to 125 chicks. Do not brood more than 250 chicks under one brooding arrangement. Look under the brooder to see what is going on at least 2 times a day.

[Next month—Housing & Management]

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SPECIAL  
MAHARASHTRA  
NUMBER



★  
FEBRUARY, 1968



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# For The Beginner — IV

By

Richard Masterson & Michael M. Panwitz,  
(American Peace Corps Volunteers)

*This is the fourth of a series of articles which are being published every month. These have been written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India.—Ed.*

## HOUSING

### Essentials of a deep-litter house.

Successful farmers raise fowls in deep-litter units because this is the most intensive and most economic way of keeping poultry. A deep-litter house must be constructed to protect the fowls from direct sun, direct wind, the rains, diseases, and wild animals such as rats, snakes, cats, and birds. Conditions in a deep-litter house should vary as little as possible, that is, the house should serve to minimize the extremes of the climate. It should be cool in the hot season and dry in the rainy season. If conditions in the unit are uniform throughout the year the hens will also perform uniformly throughout the year and will not be subject to production fluctuations as are fowls reared in the open and exposed to the elements.

A beginner should construct the cheapest possible unit even if, it will last only for a couple of years. Once the farmer is convinced that he can make good profit with poultry he can then construct more substantial and permanent buildings. If he finds poultry unprofitable the investment for an inexpensive unit will not be a great loss. Not more than Rs. 2.25 per square foot should be spent for an inexpensive building and not more than Rs. 4/- per square foot for a very substantial unit.

### Details of a deep litter house.

**Site :** To prevent flooding during the monsoon, select a well drained area for the poultry building. If the house can be placed under a shade tree it will stay cooler in the hot season. Some grass planted around the house will also be cooling by cutting down on the sunlight reflecting into the house from the surrounding ground.

To be well ventilated, the house must be isolated from other structures, and not be built against steep hillsides or in depressions. Keep layer-houses at least 100 feet apart from each other and chick-rearing houses 150 feet away from layer houses.

**Foundation and Floor :** The foundation (wall footing) should reach 12" below and 12 inches above ground level. The floor then will be 12 inches above the ground.

When using laterite, the foundation wall is 9 inches thick (single laterites positioned flat) and 4 laterites high (usually laterites are 6 inches thick, 9 inches wide, 18 inches long). With country bricks make the foundation wall 2 bricks wide and 2 bricks high.

Often, a great deal of money is wasted on unnecessarily massive foundations. Only if very large, tile roof houses are constructed, need the foundation be stronger.

The 12 inches of foundation above the ground is filled up with broken laterite, granite chips, gravel and dirt and then well compacted. A layer of broken glass pieces worked into the foundation will discourage rats from burrowing up into the house.

Before erecting the walls and before putting down the floor, cover the whole area with a  $\frac{1}{2}$  inch thick layer of sand mixed with burnt oil to waterproof the building.

A good cement floor is a must; it will keep out moisture, discourage rats and make it easy to clean the house.

**Walls and Pillars:** Walls should not be more than 6 inches thick (a laterite put on edge, or a single thickness of country bricks), no matter how large the house. Walls do not have to support anything (the roof is supported by pillars) and need not have much structural strength.

The sidewalls are  $2\frac{1}{2}$  to 3 feet high plus 3 to  $3\frac{1}{2}$  feet of wiremesh ( $\frac{1}{2}$  inch holes) to make a total height of 6 feet. The end walls are 5 feet high, with all of the gable area filled out with wire mesh. The wire mesh should not have holes larger than  $\frac{1}{2}$  inch to keep wild birds, etc. out. If the holes are less than  $\frac{1}{2}$  of an inch ventilation is impeded.

For thatched units of up to 200 square feet pillars are not needed at all. The roof can be supported by the end walls (raise the wall from 5 to 6 feet at the corner only) and by the bamboo pieces on the sidewalls (which are used to keep the wire net up). For larger thatched units pillars at the corners of the building and pillars along the sidewalls are needed but no pillars at the endwalls. Instead of pillars at the endwalls support the roof by bamboo or timber pieces placed on

top of the endwalls. Do not construct pillars in the centre of the building, a simple wooden pole will do. We place all this emphasis on reducing the number of pillars because they are the most expensive part of masonry and because traditional masons always insist on far too many and far too massive pillars. For tile roof houses pillars are quite necessary because a tile roof is much heavier than a thatch roof and because the sides of a tiled house are 7 feet high rather than 6 feet. Nevertheless, the pillars should not be more than 12 inches square. No pillars are needed at the end walls, the roof can again be supported by beams placed on the end walls. For tiled units centre pillars are not needed because cross beams support the roof.

**Important:** Construct pillars so they do not protrude into the building but are flush with the inside wall. If they protrude into the building the floor area is reduced, unnecessary extra corners are created which make it more difficult to clean the house, more cement is required for the inside plastering (no cement is used for the outside plaster) and the chicks will tend to peck the edge of the pillar.

Fix the wire net on the INSIDE edge of the walls so that there are NO INSIDE LEDGES. Fowls will roost on ledges and dirty the ledges and the walls with droppings. Exposed droppings on ledges and walls are unsanitary and attract flies. Fowls should never be any where except on the litter or in the nests laying eggs.

**Roof:** A thatched roof (treat the coconut leaves with the ASCU process) is the best choice, especially for a new farmer. Thatch keeps the house cooler during the hot season.

and drier during the rainy season (if well made) than any other material. Tin-sheets or asbestos sheets for roofs are entirely out of the question because they are expensive and make the house very hot in the hot season. Tiles can be used but only if the sidewalls are raised to 7 feet, if boards or bamboo matting are placed on the under side of the rafters creating an air space which acts as insulation. A row of smoke tiles should also be incorporated near the peak on both sides of the roof for ventilation.

For thatched roofs cross beams are not needed. It is cheaper to support the roof with a centre post than with cross beams. For tile roofs however crossbeams are needed to support the heavy tile roof. Prevent the fowls from roosting on the crossbeams by stretching wirenet from the crossbeam to the roof, filling out the whole triangle. **IMPORTANT:** The roof must have a 3 foot overhang on all sides to keep out direct sunlight and rain. This means 3 feet sticking out from the end wall also.

#### Advantages of thatch :

- (1) Keeps house cool in hot season
- (2) Keeps house dry in monsoon
- (3) Inexpensive
- (4) Overhang easily constructed
- (5) Light weight, requiring no pillars, and light supports and rafters.

#### Advantages of Tiles:

- (1) Permanent

#### Disadvantages of thatch:

- (1) Has to be replaced yearly unless it is ASCU treated in which case it will last 3 monsoons.
- (2) Will break unless made well.

#### Disadvantages of tiles :

- (1) Hot in the hot season unless well insulated and unless smoke tiles are incorporated into the roof. Tiles are radiators of heat.
- (2) Wet in the monsoon because moisture condenses on tiles, poor ventilation through the tiles.
- (3) Expensive.
- (4) Higher walls than with thatch, stronger pillars, stronger beams and rafters are required. Expensive.
- (5) Overhang is expensive because here again strong rafters are needed.

**Door :** A 3 feet wide, 6 feet high door opening to the outside and provided with a good lock is placed in the centre of one endwall. Do not place the door on the side wall because the overhang of the roof will interfere with the opening of the door. The door frame must be strong because it is also used as a support for the roof. (One of the roof support beams reaches from the top of the door frame to the peak of the house.) The door only starts 10 inches above the floor of the house. The 10 inch space between the bottom of the door and the floor is closed with a removeable board. This board prevents the litter from falling out of the house when the door is opened. The litter can be cleaned out of the house when desired by removing the board.

**Drainage Pit:** Drainage pits serve to solve the wet litter problem. Water spilled from waterers which are placed over a drainage pit will not spill into the litter but into the pit and drain away. One 18 inch square, 2 feet deep (filled with gravel) pit is enough for 75 birds, 2 such pits for 75 to 200 birds; 3 for 200—300 birds; 4 for 300—400 birds; etc. (When a 6

inch deep, 15 inch diameter plastic pan is used as a waterer).

The edge of the drainage pit is level with the floor of the house and filled with gravel up to floor level. A 10-inch high wooden frame is placed around the pit to prevent litter from falling into the pit. The frame is covered with a heavy metal grid or expanded metal on top of which the waterer is placed. Only 2 inches of the 10-inch high frame will be visible when the house is filled with 8 inches of litter. The fowls can drink easily while standing next to the waterer on the litter.

**Disinfectant Pan.** Construct a 3 feet long, 1½ feet wide and 3 inches deep cement pan directly in front of the entrance to the poultry house. Always keep this shallow pan filled with a solution of phenol and water. Place a coir mat into the pan, the solution just covering the mat. Every time someone goes into the house he must rub his feet on the mat, thus disinfecting them. Clean the pan and change the solution daily.

**Plastering.** All inside walls are plastered up to a height of 3 feet with a plaster rich in cement. For the remaining portion of the inside walls and all of the outside walls a sand and lime plaster is sufficient. Unless covered with a durable, hard cement plaster, the chickens will pick holes into the walls.

**Whitewash.** All wall surfaces inside and outside, including the floor, are triple—white—washed. This serves to disinfect the house and also makes the interior brighter. Paint is very expensive, do not use it.

**Burnt-oil.** All wooden surfaces are thoroughly covered with burnt oil to discourage rot and white ants. Those wooden surfaces which will be in contact with masonry

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should be painted with burnt-oil before they are put into place. Do not use paint except for the door.

**Electrification.** Supply one electric socket for every 200 square feet (100 fowls). Install a 60 watt bulb with a good metal reflector—7 feet above the litter for every 100 fowls. Switches for the lights in the poultry house should be placed on the outside so the farmer doesn't have to disturb the fowls when switching lights on or off. Provide a plug in the house for the brooder. Individual switches for brooder temperature control are convenient to have, but not essential. Consider the installation of a separate electric meter for power consumed in the poultry house because electricity used for such purposes is sold at special rates. Consult the electricity board for details.

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MARCH, 1968

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# For The Beginner — V

By

Richard Masterson & Michael M. Panwitz,  
(American Peace Corps Volunteers)

*This is the fifth of a series of articles which are being published every month. These have been written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India.—Ed.*

## EQUIPMENT

**Feeders:** Since the single largest expense in the running of a poultry farm is on feed, it is essential that feeding is done with a minimum of wastage. Feed wastage reduces profits drastically. A well designed feeder will reduce feed wastage. Don't try to save money by sacrificing quality when purchasing a feeder.

Essential features of a good adult trough feeder are: (1) At least  $4\frac{1}{2}$  inches deep, (2) slanted sides, (3) a 1 inch lip along the upper edge to prevent the billing out of feed, (4) made of metal sheet, (5) at least 3 feet long. Trough feeders should be hung so that the lip of the feeder is at the height of the birds back. Birds should not have to bend down to eat. If they have to, other birds tend to peck at the exposed vents of the birds bending over. This can cause cannibalism. Birds will also waste more feed when bending down to eat than when they have to reach slightly for the feed. A strong wire (14 gauge), should be strung tightly from one end of the feeder to the other so it does not sag. This prevents the fowls from getting into the feeders and from standing over top of it because they cannot balance at the tightly strung wire.

The feeder described above is for adult fowls. For chicks a feeder  $2\frac{1}{2}$  inches deep with a  $3/4$  inch lip is sufficient. Chick feeders are also hung when the chicks are a few days old and progressively raised as the chicks grow.

Do not use feeders constructed from bamboo. They are difficult to clean, not of uniform size and do not have a lip. Do not use tube-type feeders. The only advantage of this type of feeder is that it holds a large amount of feed and saves labour. The disadvantage is that even the best tube-type feeders waste feed. If you adjust them so they don't waste feed, the feed will not drop down. All feed varies in its mix and its mixture content. So if the feeder is properly adjusted, when the humidity changes they will be out of adjustment. In feeding it is important that fresh feed be fed daily while feed in the tubes tends to get stale. The problem with tube-type feeders then is that even though they hold large amounts of feed they still require daily attention and waste feed. The farmer who has tube-type feeders tends to have a false sense of security believing that his birds have feed when they may actually not have any. Finally, tube feeders are much more expensive than the trough type.

**Waterers:** For day-old chicks, waterers have to be designed so that the chicks cannot walk into the waterer and become wet. Many farmers have used 26 cm. diameter enamel plates with a wide mouth (20 cm.) clay pot inverted into the plate. A couple of small holes are drilled near the rim of the pot as the chicks drink from the waterer. Test the



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waterer to see that it works properly several days before using it.

Very often new clay pots will leak although there are no obvious holes. Let the clay-pots stand full of water for a couple of days and most of them will be leak-proof. As the chicks grow, clay-pots with a more narrow mouth are used so that the watering space is widened. The waterers should also be raised off the floor as the chicks grow so that the birds always have to reach slightly for the waterer. Sometimes Dalda tins are used instead of clay pots.

To raise the waterers, place bricks under the enamel plates. Smooth, even bricks must be used to keep the water level and prevent overflowing. Also, do not put the bricks on top of the litter but start them from the cement floor. If the bricks are put on the litter the waterer will never be level and the litter under the bricks will become mildewy and a breeding place for insects.

Unless discouraged, fowls love to perch on top of the waterers and thus dirty both the clay pot (or Dalda tin) and the waterers with their droppings. This would be a perfect way of spreading diseases from one fowl to the rest of the flock. Perching can easily be prevented by suspending an empty tin can so it hangs just above the clay pot. Any fowls attempting to perch on the waterer will be gently knocked down by the can and after some time the birds don't even attempt perching on the waterers any more.

As soon as the fowls are big enough (13-14 weeks) adult waterers should be introduced. These are 15 inch diameter, 6 inch deep, plastic pans placed over drainage pits. (See last instalment for details on drainage pits.) A metal guard is placed on top of the waterer

(supported on the rim of the plastic pan by 3 hooks) to prevent fowls from getting into the water. The metal guard leads straight up from the rim of the waterer for about 3 inches and then tapers to a common point about 15 inches above the rim of the waterer. (The reason for having a portion of the water guard lead up straight from the rim of the pan (3 inches) is to prevent the fowls from perching on the rim of the waterer. If the guard leads up slanting directly from the rim of the pan the fowls will perch on the rim.) At the highest point of the water guard a small (1½ inch diameter) ring is fixed by which the guard can be lifted off the plastic pan when the pan has to be taken out of the house for cleaning. A thin wire or string is attached to the ring, this wire leading up to the ceiling. This serves two purposes, (1) with the wire in the way the fowls can not perch on the top of the waterer, (2) when the guard is lifted off the pan to remove the pan for cleaning, the guard hangs from the wire rather than having to be put on to the litter, possibly dirtying it. The guard is made of 8 gauge wire but can be made of even thinner wire.

**Brooder and brooder guard:** Brooders and brooder guards are used only for a short period of 3 to 4 weeks and should therefore be of the simplest and cheapest design possible. Do not build permanent brooders or brooder guards from lumber or even metal. Such equipment will be ideal for 17 out of the 18 months of a full cycle of a flock. We have found ordinary bamboo-cane baskets or even palmiera leaf baskets entirely sufficient as brooders and simple bamboo matting sufficient as brooder guards.

A 3 foot diameter and 1 to 1½ foot deep bamboo-cane basket costing not more than Rs. 3.00, is sufficient to brood up to 175

chicks. A cane basket is plastered with mud (to close up all the holes) and whitewashed (to disinfect it and make it a good reflector) and fitted with three sockets for three light bulbs. The basket is inverted and hung from the ceiling by three coir ropes. Newspapers are fastened above the basket to form a cone over the three coir ropes. The newspaper hangs down to the upper edge of the basket. This prevents the chicks from climbing on top of the basket and roosting there leaving droppings. (See instalment in January issue for more details on the brooding arrangement.)

If electricity is not available a kerosene lantern can be used as a heat source. Place the lantern securely on some bricks (it should not be able to topple over) and surround it with a fence of wire mesh (with very small holes so the chicks can not stick their heads through the wire mesh). Cut a hole in the cane basket above the lantern to allow noxious fumes to escape.

Brooder guards are  $1\frac{1}{2}$  foot wide strips of bamboo-matting cut from large rolls of bamboo matting available in every market. Getting large rolls of bamboo matting like this and cutting it is much cheaper than having 2 feet wide rolls made specifically for the brooder guard. The guard will stand well if worked into the litter and supported from the outside with bricks or small bamboo stakes.

**Nests:** Nests are made from 14 x 14 x 14 inch tea chests, (or a similar size) assembled in double rows on a stand that keeps the nests about  $1\frac{1}{2}$  feet above the litter. (The stand is 2 feet high). Keeping the nests off the ground prevents fowls from kicking litter into them, doesn't take away floor space, and the farmer always can see what is going on under the nests without having to move them. 3 inches of the bottom part of each nest are closed off

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with a 3 inch wide board (1/5th of a tea chest lid) to keep nesting material and eggs from falling out of the nest. Long reapers on hinges are fixed in front of each row of nests so the fowls can jump up to these reapers and then step into an empty nest. These reapers are constructed in such a way that they can be folded up at night to close the nests. The fowls then cannot roost in the nests at night, keeping the nests clean and discouraging broodiness.

Wirenet is fixed at the top of the uppermost row of nests and is stretched from there all the way to the ceiling or the roof of the building. It is then impossible for the fowls to roost or to even get onto the top of the nests. It is much better to use wire net stretching up to the ceiling, than to use slanted roofs.

Nests are usually placed in the centre of the house because that is the darkest and coolest place of the house. Having the nest in the

centre of the room also permits two rows of nests to be placed back to back.

### Other Equipment and Tools:

(1) Each farmer should have a wooden, rat-proof feed storage bin with a capacity of 2 bags of feed (150 kg.). The bin stands on small legs to prevent rotting from the floor. So don't keep feed in bags on the farm, rats will get at it.

(2) For putting feed into feeders use a scoop. Inexpensive scoops can be made from "Dalda" tins by cutting a portion of the tin off in a slanting fashion and attaching a handle to the tin.

(3) Carry the feed into the poultry house in a bucket.

(4) Eggs are collected in a rigid bucket or wire basket. Do not use a plastic bucket. A plastic bucket when lifted after being filled with eggs will give in and squeeze the eggs and break them.

(5) Keep a small scale (a letter weighing scale will do) for weighing the eggs so they can be sold by weight grades.

(6) Keep a large garden cultivator or hoe for turning the litter.

(7) Keep a broom on a very long handle (7 feet) for cleaning high up portions of wire net and other high parts of the house from cobwebs that collect there.

(8) Have 3 circular rubber stamps made with the name of your farm and the grade of the egg (L = large, M = medium, S = small) on it. The block onto which the rubber is glued should have a small hole cut into it just under the part of the rubber seal which will be pressed against the egg. This way, when the stamp is pressed against the end of the egg, the rubber part will be able to give (be pressed into the hole in the block underneath) and "fold" around the end of the egg. Do not stamp the side of the egg, it tends to break.

(Next Month -Feed)  
Poultry Guide

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# For The Beginner — VI

By

Richard Masterson & Michael M. Panwitz,  
(American Peace Corps Volunteers)

*This is the sixth of a series of articles which are being published every month. These have been written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India.—Ed.*

## F E E D

### Introduction

Feed costs make up approximately 70% of the total outlay of rearing a flock of birds through one complete 18 months cycle. Feed is one of the most important items in a farm's success or failure, its importance cannot be over emphasized. A high quality feed must be well balanced to meet the fowls nutritional requirements. It must also be fresh, of a consistent composition and, perhaps most important, must always be readily available.

The farmer can purchase ready-mixed feed or mix his own using "concentrates" as a base. One important point: unless a farmer uses concentrates it is extremely difficult to mix well-balanced feed.

Generally, feedstuffs are not readily available. To make sure that there never is a break in the supply of feed the farmer cannot afford to waste any of it. To ensure minimum waste, feeders must be, (1) properly designed from metal, not bamboo, and with a good lip, (2) hung so that the lip of the feeder is at the same height as the back of the bird, (3) filled never more than half full, (4) filled not by hand but with a small hand tool. Also store feed in a dry, rat-proof, container. Remember a farmer cannot afford to waste feed.

### Feed mixing

In rural areas ready-mixed feeds are often difficult to obtain and also more expensive than in other places because of the extra transportation cost. Farmers in those areas may therefore prefer to mix their own feed using "concentrates" as a base. Concentrates contain the ingredients which are almost always very difficult or impossible for the farmers to get, that is, vitamins, minerals, antibiotics, proteins, and essential oils, all in the correct proportions. All that the farmer needs to add to concentrates are locally available grain by-products. Mixing a feed from concentrates will therefore be faster, easier, more reliable and result in a more completely balanced feed than the farmer could ever hope to get by mixing feeds without concentrates.

The nutritional requirements of poultry vary with age. For this reason there are three basically different mashes to meet the nutritional requirements of the birds at various ages: Chick Mash, Grower Mash, and Layer Mash. In the first 10 weeks chicks require large amounts of protein because of their rapid growth. Chick Mash contains a large amount of protein. Chick Mash also contains more vitamins to help the birds at the very young age and a coccidiostat to build up resistance to coccidiosis, one of the most common poultry diseases.

The Grower Mash contains less protein because the birds do not grow as fast after the first 10 weeks. By having less protein the growth of the birds is controlled so that they do not lay eggs too early. Early egg production is undesirable because it results in small eggs and other irregularities.

By the 22nd or 23rd week the Layer Mash should replace the Grower Mash. At this time the the birds begin to lay eggs and a slightly higher protein content is required for maintaining good body health of the birds.

Feed Ingredients	Chick Mash 0-10 Weeks					Growers Mash 11-22 Weeks			Layer Mash 22nd week and above							
Chick Concentrate	35	35	35	35	35											
Poultry Concentrate						25	25	25	25	25	25	25	25			
Poultry Con. with maize												45	45	45		
Ground Cereals	30	20	30	25		15	20	25		30	25	25	25	10	10	15
FRESH																
Rice Polish	30	10	15	20	25	35	10	35		38	10	25	10	38	20	
Wheat Bran	5	15	5		9	25	25	15		4		10	4	4	10	
Tapioca		20	12	14	25		20			30	18	22		14	20	
Gingelly Oil Cake				6	6					7	4				7	
Fishmeal				3								5		4		
Oystershell										3	3	3	3	3	3	
Total Kgs. 100						All formulas totals are same										

## Ground Cereals

These include any grain such as wheat, jowar, paddy, maize, and broken rice. Cereals should be finely ground for chick and grower mashes and coarsely ground for layer mash. To ensure yellow colour of the egg yolk, the layer mash should have 20% of yellow maize. If maize is not available the farmers can purchase a concentrate that already contains enough maize to give a level of 20% in the final ration. (See the last 3 formulas under layer mash.)

## Rice Polishings

It is very important to get high quality rice polish because it constitutes a large portion of the fed mixture. It is most important to use FRESH Rice Polish as it tends to spoil quickly. Rice polish is the brown or white covering on the rice grain, (not the rice husk). It has a reddish or creamish appearance, and should smell and taste sweet. There should be no paddy husk mixed with it and when squeezed in the hand it should stick together in a loose ball.

## **Taploca**

It should not be too fibrous or woody and should be sun dried. Some varieties must be boiled to destroy the harmful materials that they contain.

## **Fishmeal**

It should be of high quality. It is important that the salt content is low and that the fish is not spoiled. It is best if it can be purchased from reliable commercial sources which guarantee a high protein level.

## **Mixing Details**

In deciding what formula to choose for the best results consider several points: the quality of ingredients that can be obtained, the dependability of the supply, and the cost of the ingredients. The cheapest feed that you can mix is not necessarily the most economical. Generally it is more important to have a reliable source of good ingredients than an unreliable source of the very best ingredients. To change the feed formula even slightly causes slumps in egg production for 3-6 weeks. Changing to new feed formulas should always be gradual. When switching from Chick Mash to Grower Mash and again from Grower Mash to Layer Mash start giving the new mixture in half the feeders about one week before you run out of the old feed mixture. This way the changes in the feed affect the birds only slightly.

The cereals should be finely ground for the chick and grower mashes. Large pieces are difficult for the young birds to eat. A finely ground mash also prevents the chicks from picking or choosing individual pieces. For the layers the ingredients should be coarsely ground so that the feed does not

APRIL, 1968

become too powdered for the birds. Layers find it difficult to swallow very finely ground, dusty feed. The feeds must always be uniformly mixed. The Layer Mash should always contain at least 20% of yellow maize to ensure yellow yolk colour. In many localities these grains are impossible to get or are very expensive. Concentrates which contain yellow maize are available.

## **Feed additives**

We do not recommend the regular, continuous use of feed - additives, such as, Egg formula, Neftin or any other antibiotic or sulfa drug. A farmer who has to add these rather costly materials to his feed to get good performance from the flock usually is cutting corners on his management. Feed additives are not necessary if the farm is managed well.

It is dangerous to give feed-additives to fowls continuously because in case of a real disease outbreak the effectiveness of medicines may be reduced by having used feed additives all along.

Medicines (and that is what feed additives are) should be given only when there is a specific disease problem or during anti-stress periods. The continuous use of feed additives is NO guarantee that there will not be a disease outbreak. In case of disease, medicines should be given in the water as mentioned above.

## **Vitamins**

A number of vitamins powders (both water soluble and for the feed) are available. Mix them into the feed or water according to instructions.

## **Vitamin Oil**

Univax vitamin oil is a fish-oil fortified with Vitamin A and D. We found that eye

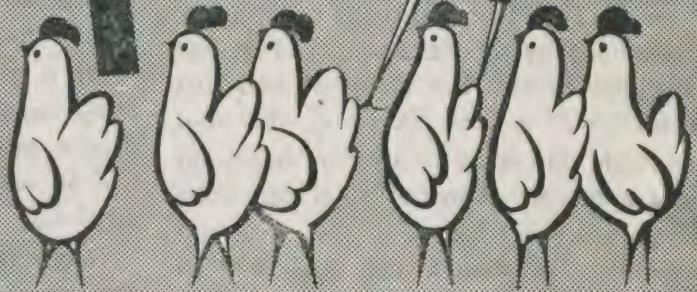
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disorders can be largely prevented by giving this oil in the feed for the first 10 weeks of the chicks life. A deficiency in Vitamin A in the diet can cause eye disorders. Feeds in general tend to be Vitamin A deficient because Vitamin A is inactivated on long exposure to air (as in old feed). Once eye trouble starts a Univax fortified feed also appears to help in clearing up the eye disorders.

In addition to the beneficial Vitamins, Univax helps make the feed more palatable to the birds because dustiness of the feed is reduced.

Univax is mixed at the rate of 1 teaspoon per kg. of feed. Mix a small amount of feed with the oil first and then mix the rest of the feed with it. Never mix more than the fowls will eat in one day. On long exposure, feed mixed with oil may become rancid. Mix the feed daily.

Some farmers give Univax in the feed to their flocks at all times because it makes the feed more palatable and because Vitamin A deficiency is a permanent problem.

### Grit, Calcium and Shellgrit

Grit is essential for proper digestion and feed conversion, calcium for proper bone development, and egg laying; and shellgrit serves both as grit and as a calcium source.

#### Grit

Chickens do not have teeth but use the grit in their gizzard (part of the digestive tract) to grind the feed. Grit should be the size of jowar grains. Make grit available to the flock in separate containers from the second week of their life onward.

**Calcium** : A good source of calcium is oystershell which is either fed separately

(crushed into small pieces) or mixed with the feed as a powder.

**Shellgrit** : Calcium and grit can be given to the fowls in the form of "shellgrit". Because shellgrit is very hard it acts as a grit and because it is somewhat soluble it also satisfies the calcium requirements of the fowls. We recommend shell grit since it is more convenient to give than to feed grit and oyster-shell separately. Shellgrit should be fed freely in a separate container from the second week onwards. For adult birds supply one 3-foot adult feeder with shellgrit for every 100 layers. Occasionally the feeder containing shellgrit must be cleaned of dust and litter that tends to contaminate it.

### Greens

Fresh greens are a good source of Vitamin A and of carotene, a material that gives a yellow colouring to the yolk. To prevent crop impaction (pendulous crop) all greens must be finely chopped before feeding them to the flock. Feed greens once a day (preferably at the same time every day) on top of the feed in the feeder.

Greens should not be thrown on the litter or hung uncut in bundles in the poultry house. Papaya leaves, green grass, and cheera, are excellent greens. Left-over greens from meals or the market place are useless.

Not more than 3 pounds of greens per 100 fowls per day should be given. Chickens love greens and will eat them in preference to the feed. If they eat more than 3 pounds per 100 fowls, the intake of poultry mash will be reduced. Any decrease in feed-consumption will cause a drop in egg production.

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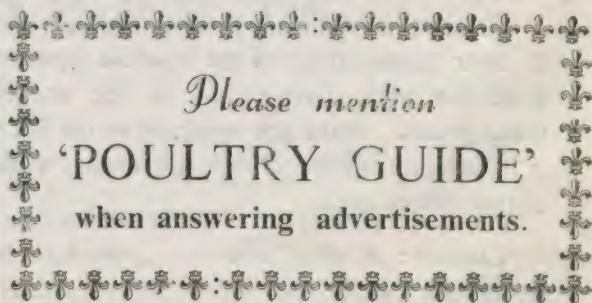
### Water

At all times fresh, clean, water must be available to the birds. Water is the most important item in the fowls diet. Birds drink 15 to 40 times a day, and consume about twice as much water as feed (by weight). Greater harm can be done to birds by not having water for a few hours than by not having feed for a whole day. Especially during hot weather plenty of cool water must be available. Fowls cannot eat properly in hot weather unless they can also drink freely; and a drop in feed consumption means a drop in egg production and therefore loss of income.

One of the most common ways of spreading disease is through contaminated water. Water must always be clean. Waterers must be constructed so they cannot become contaminated by birds' droppings or by litter falling into them. Waterers must be thoroughly scrubbed and cleaned daily.

When medicating a flock it is best to give the medicine in the water. Most medicines are available in water-soluble form. It is easier, quicker, and more reliable (most uniform) to mix medicine in the water than in the feed. Sick birds will stop eating before they stop drinking. Medicine given in the water will enter the bird's system faster, begin to fight the disease sooner and thus reduce losses.

*Next month—Disease prevention programme*



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MAY, 1968



VOL. V — No. 5



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# For The Beginner — VII

By

Richard Masterson & Michael M. Panwitz,  
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*This is the seventh of a series of articles which are being published every month. These have been written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India.—Ed.*

## DISEASES

### Prevention & Control

The prevention and control of diseases on a farm is crucial to the success of a poultry operation. Profits can be greatly increased by following completely, a programme of prevention and control of diseases. Constant application of such a programme will save a lot of time in the long run and will be rewarded by low mortality and high returns.

Many farmers take the attitude that in case of a disease outbreak, fowls can always be treated with medicines. This is an excessive way of solving the problem and is one of the main factors why these farmers are unable to make money from their poultry business. The wise and successful farmers understand that the old proverb "An ounce of prevention is worth a pound of cure", applies very directly to his poultry farm. Great savings can be made through proper management, correct feeding programme, sanitation procedures, vaccination programme and by using the right kind of stock. However, the farmer should also be aware of the diseases that exist and have some basic knowledge of them. Even with excellent management there can be disease outbreaks. The farmer must always be prepared to act quickly and medicate promptly in case a disease does occur. Expert advice should be sought immediately and the prescribed medicine must be given strictly

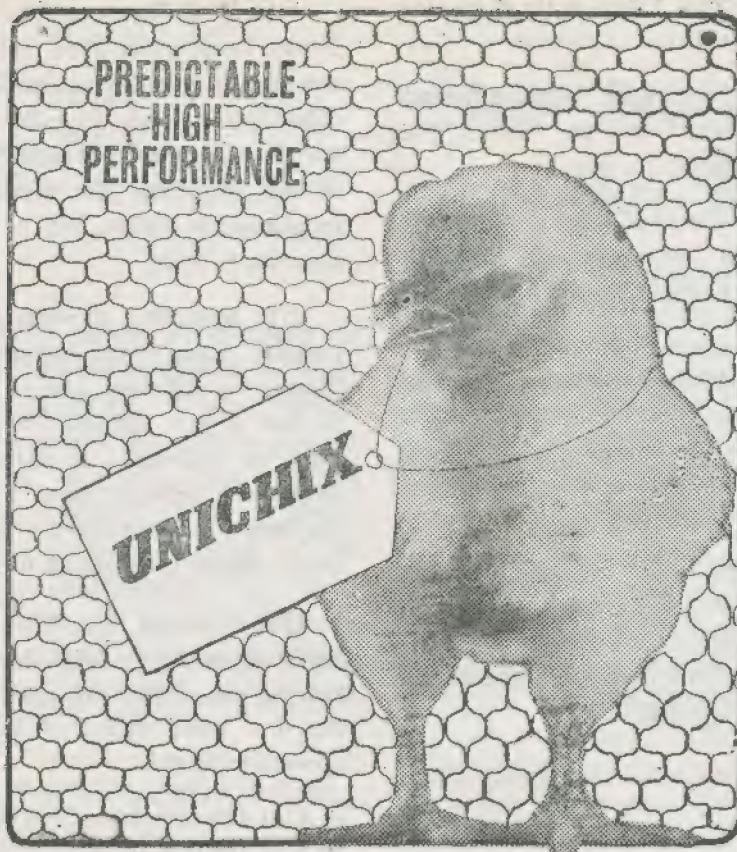
according to instructions and for the period indicated.

In the following section a detailed disease prevention programme has been outlined. This programme has been used by farmers in Malabar with resulting low incidence of disease.

### A Disease Prevention Programme :

- (1) Get disease free stock from a reputable hatchery
- (2) Thoroughly clean and disinfect house and equipment 10 days before the arrival of a new flock.
- (3) Keep chicks isolated from adult birds. Many diseases can be avoided if young birds are located in house 150 feet away from other stock. Don't have the chicks and layers close together.
- (4) Avoid traffic between adult birds and chicks. Adult birds are one of the main sources of infection to chicks. Separate persons should take care of separate batches of birds of different ages;
- (5) Use disinfectant pans in front of all entrances to poultry houses. A coir mat is kept in a shallow concrete disinfectant pan filled with phenol water. Everyone entering the poultry house brushes his feet on the

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coir mat disinfecting them at the same time. This minimizes the spread of disease.

(6) Do not allow visitors, salesmen, friends, or anyone else near the poultry house. They are all potential disease carriers.

(7) Birds once removed from the farm (for an exhibition or taken to the Veterinary Hospital) should never be allowed back on the farm.

(8) Keep wild birds, rats, dogs, cats, and flies away from the farm.

(9) Dispose off dead birds immediately (disposal pit, or bury them deep).

(10) Isolate sick birds. Remove them to a different house (not to another pen in the same house with healthy birds.) Have some one other than the person looking after the healthy fowls take care of the sick ones.

(11) Treat droppings as potential disease spreaders.

(12) Keep the area around the poultry farm clean to discourage flies. Remove piles of old litter, they attract flies.

(13) Turn the litter in the poultry house daily. This allows the litter to "work", developing heat and ammonia fumes which destroy coccidiosis oocysts, worm eggs, and fly eggs.

(14) Bring only clean equipment into the farm. Be careful with feedbags, they are potential disease carriers.

(15) Birds must be separated by breed. Never keep more than one breed in one pen: different breeds have different requirements. There will be competition between them and neither will develop properly.

(16) Birds must be separated by age. Never keep more than one age group in one pen or even in different pens in the same house. Adult birds, even though they are not sick, may be disease carriers and can infect younger chicks. Different age groups have different requirements which can be supplied only in separate housing.

(17) Minimize movement between layer houses. Keep layer houses 100 feet apart. Employ a different person for each house. If that is not feasible, very strict sanitation must be followed. If there is uncontrolled movement between layer houses all fowls on the farm will come down with disease if disease breaks out in only one of the houses.

(18) Medicate in stress situations. Give antibiotic antistress medicine before and after vaccination, debeaking, worming and during the first three weeks of the chick's life at preventive levels.

(19) Observe the flock closely day-to-day. Be alert for any disease outbreak or unusual behaviour of the birds.

(20) Avoid handling of the birds. Careless handling can cause stress and strain—a needless drain on your profits.

(21) Whenever you suspect any trouble contact the veterinary surgeon for professional advise. This way, diseases can be nipped in the bud.

(22) Conduct a post-mortem on every fowl that dies, so that problems can be spotted at an early stage.

(Next Month : Diseases & their treatment)



Somebody told Buck  
that he'd never  
breed a 2½ lb. layer  
that laid  
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By the way, if that 200 eggs per bird per year still scares you, here's a bit of interesting news. Somebody told Buck that the little Hy-Line would never lay more than 200 eggs per year. And you already know how Buck feels about the word "never."



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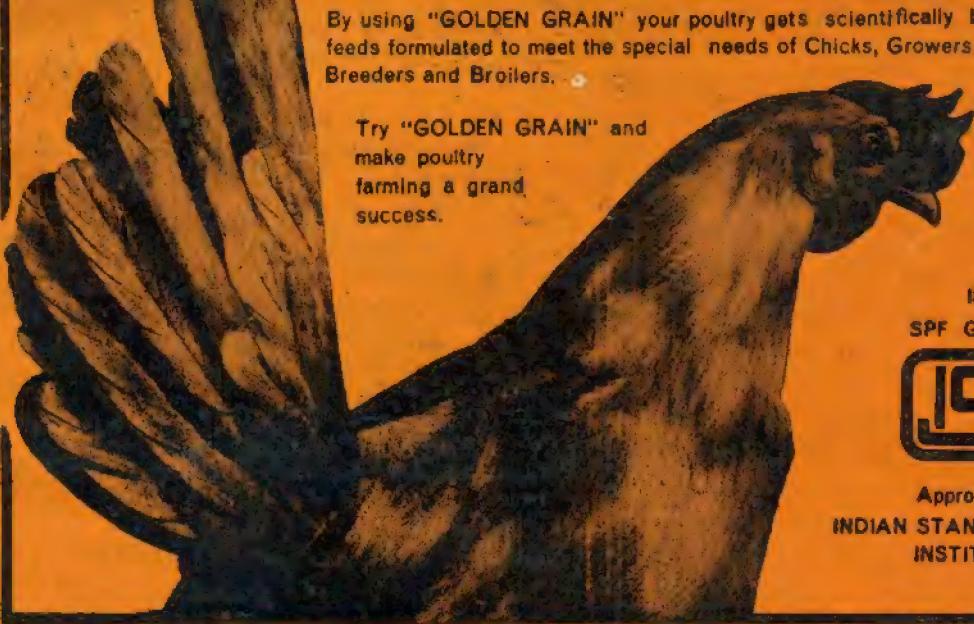


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# For The Beginner — VIII

By

**Richard Masterson & Michael M. Panwitz,**  
(American Peace Corps Volunteers)

*This is the eighth of a series of articles which are being published every month. These have been written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India. The views expressed by the authors are not necessarily shared by us.—Ed.*

## Diseases & their Treatment

In this section a number of diseases, their symptoms, steps to prevent them, and treatment for them are described. Only those diseases which we have actually observed on commercial farms are mentioned. The preventive steps described and the medication indicated in each case are only those which were employed with success.

### Coccidiosis

This is the most common and most destructive disease of poultry in commercial flocks in Malabar. Coccidiosis is caused by microscopic protozoans called coccidia which attack the intestinal linings and interfere with the absorption of food from the intestine. It can cause high mortality up to 12 weeks of age and stunts the growth of the fowls.

**Symptoms:** loss of appetite and weight, ruffled feathers, listlessness, pale appearance, and a very typical hunched position with retracted head and drooping tail. Bloody droppings usually are seen but not always. Post mortem reveals conditions varying from blood filled intestines swollen to several times

their normal size in extreme cases to localized infections in the caeca or other specific parts of the intestine, to no symptoms at all. Always try to get a laboratory analysis if coccidiosis is suspected.

**Prevention:** Coccidiosis oocysts survive for more than a year in the humid, warm soil of Malabar. Therefore, thorough cleaning and disinfection of any farm with coccidiosis history is essential before new fowls arrive. Since coccidiosis is spread most commonly through fowl droppings, be sure to turn litter daily. Turning will keep the litter dry, thus discouraging oocysts which require moist surroundings for survival. For chicks a coccidiostat is given in the chick mash. The coccidiostat prevents a serious outbreak of coccidiosis, but by allowing a mild infection of coccidiosis, it helps to build up resistance to the disease.

**Treatment:** Coccidiosis can occur even when a coccidiostat is administered. On the first sign of the disease start a curative treatment with one of the sulfa-drugs (Embazine, Sulmet, etc.) following instructions carefully. If there are no improvements with one drug or the disease attacks again in a short time try a different brand than the one used the first time.

**Leukosis:** This disease is comparable to cancer of man and as incurable. Several forms of the disease have been described but the visceral form is the only form that has been observed in commercial flocks in Malabar. Typically the liver is affected but the kidneys, heart and the membranes in the body cavity can be involved also. If leukosis has been confirmed in a flock (by post mortem) any fowl that shows symptoms similar to the symptoms of fowls that died of leukosis should be isolated immediately. Allow no traffic between the isolated fowls that have leukosis and other flocks, the disease is highly contagious. Leukosis is a very common disease and almost every commercial farm in Malabar has had cases of it. Serious outbreaks of coccidiosis tend to make the flock more prone to a leukosis attack later in their life.

**Symptoms:** Outward signs of visceral leukosis are nonspecific. The combs and wattles may shrink and usually the birds eat poorly and lose weight. Occasionally there is a whitish or yellowish diarrhoea.

Internally one or several organs may be affected. The liver may be two or three times its normal size with small white tumors and a lighter colour than normal. In other cases the liver may be covered by large, round, smooth, whitish tumors with flat surfaces. Sometimes the liver is not affected but the heart may be encircled with white, fattish strips of tumors. The kidneys, the gizzard, and lungs can also show tumors. Frequently the only signs of the disease are many small irregular whitish tumors on the various membranes in the body cavity. These are the membranes that hold the organs and intestines in place. The tumors on the membranes resemble small bits of cooked egg white. Either one or a combination of two or more of the above symptoms can be seen in leukosis cases.

Death due to the disease is rare before 12 weeks and most frequent after 20 weeks of age.

**Prevention:** As mentioned earlier practically every flock of birds is affected by leukosis.

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This disease should be taken to prevent a serious outbreak of it. For several years hatcheries have attempted to breed leukosis resistant strains of chicks; it is such strains the farmer should start with.

We have found that various stress factors tend to bring on a leukosis outbreak. Stresses such as over-crowding, insufficient feeding and watering space, poorly managed, thin litter, and poor ventilation must be avoided. The highest mortality due to leukosis has been after severe or mishandled outbreaks of coccidiosis. A severe attack of coccidiosis apparently reduces the resistance of the flock to leukosis. Always treat coccidiosis quickly and thoroughly if you want to avoid much more serious leukosis trouble later on. Strict sanitation procedures must be observed since leukosis is highly contagious and can spread rapidly from flock to flock. Affected fowls must be isolated and fowls that have died from leukosis disposed of immediately.

**Treatment :** There is no specific treatment for this disease. At the first sign of leukosis administer curative doses of antibiotics through the drinking water for two weeks. This will ward off secondary infections and assist the fowls in fighting off the leukosis.

### Other forms of leukosis

Unless a diagnostic laboratory is available other forms of leukosis are very difficult to identify. There seems to have been some cases of neural leukosis (affecting the nervous system) in Malabar. In this form the wings or legs of the birds became paralysed.

### Fowl Pox and Ranikhet

Both diseases are highly destructive, causing prolonged illness, high mortality in young

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birds and drastic reduction of egg production in layers.

All flocks should be vaccinated against Fowl Pox and Ranikhet disease (see under vaccinations). There is absolutely no reason why any flock should be attacked by either one of the diseases because the vaccinations will impart life-long immunity to the fowls.

Occasionally vaccinations cause some fowls to be partially paralysed. If these cases (there will be very few) do not improve within two weeks time after the vaccination, destroy them.

Some farmers have had good results with paralysis cases by treating the affected fowls with "Berin" a nerve stimulating drug.

### Coryza

Coryza is similar to a cold. It has rarely been seen on commercial farms in Malabar.

**Symptoms :** Watery, sticky, discharge from the nostrils and a swelling of the face which causes the area around the eyes to take on a bluish tinge. The sinuses are fluid filled and there may be mucous in the trachea. Mortality is low but the disease stunts growth, occurring mostly in the late chick and growers stage.

**Prevention :** Coryza is mainly a management problem. It should not occur in well ventilated houses where the litter is turned regularly and where the chicks get sufficient Vitamin A in their diet.

**Treatment :** Avisol is effective in treating coryza. Follow the instructions carefully.

### Eye disorders

**Symptoms :** The first sign of this disorder is a watery eye. Usually only one eye is affected and only very few birds suffer from it.

Cause is unclear, but we suspect a nutritional deficiency (Vitamin A). After about a week the affected eye becomes covered with a thin white film. As the disease progresses the eye swells up with accumulation of cheesy, white material and the bird loses appetite and falls behind the flock in growth. Death from this disorder is rare but the bird never develops properly unless cured.

**Prevention :** Feed fortified with Univax (Vitamin A) oil almost always prevents this disorder when fed from day-old onwards. (See also "Feed"—sixth Article in April issue)

**Treatment :** On the first sign of the disease (usually it is noted only after the white film is formed) wash the bird's eye three times a day with salt water and apply antibiotic ointment. The white film (or in an advanced stage, the accumulation of cheesy material) must be removed. This can be done with a wet cotton swab which sometimes results in the loss of the infected eye. The loss of the eye doesn't appear to bother because once the infection is cleared up it will develop properly.

## Worms

Worms are parasites that most commonly live in the small intestine but are also found in the caeca of fowls. They rarely cause death but stunt the growth of birds, cause extreme drops in egg production and reduce resistance of the birds to other more serious diseases. Worm infestations are very common in Malabar where the warm and moist climate is favourable to their propagation.

**Symptoms :** Droopiness, loss of weight, and diarrhoea which may contain worms. Post

mortem examinations should be concentrated on: (1) The blind end of the caeca. Cut off the tips of the caeca and examine the contents closely, caecal, worms are very small. (2) The loop of the intestine around the pancreas. (3) The central portion of the intestine.

**Prevention :** Most important are sanitation and litter management. Minimum traffic and use of disinfectant pans cut down on introduction of worms into the poultry unit. Regular turning of the litter, removal of wet patches and maintenance of at least 6 inches of litter reduces the multiplication of worms in the litter. A regular deworming programme is an almost absolute guarantee of preventing an infection. Start deworming 10 days before the Fowl Pox vaccination and repeat once every month thereafter.

**Treatment :** Deworm the fowls on first signs of worms. If the attack is severe, repeat the treatment 10 days after the first treatment was given.

**External Parasites :** External parasites such as lice, ticks, and mites can cause much irritation to fowls resulting in reduced feed intake drop in egg production and a general decline of health. External parasites can also be carriers of other serious diseases.

**Symptoms .** Nervous behaviour, drop in feed consumption, and egg production and presence of parasites on inspection.

**Prevention :** External parasites are very common every where and spread easily. Therefore, good sanitation and reduction of traffic to the farm by outsiders will keep the parasites off the farm. Check the fowls frequently for parasites. Carefully look through the feathers down to the skin especially under the wings, around the neck and below the vent.

**Treatment :** Spray Malathion gently over all the fowls, the litter, nests, and walls. This insecticide is effective for all external parasites and a single application usually takes care of the problems. Before spraying remove all feeders and waterers from the house to prevent contamination. It is best to spray the fowls after they have settled down for the night using just enough light to work without disturbing them. Alternatively, insecticide powders such as gammexene, DDT and Malathion can be dusted directly on the bird.

### **Directions for the use of Malathion**

#### **Direct Application**

**Spray :** Malathion 50% emulsifiable insecticide 30 ml. per 4 litres of water for 100-150 Birds.

**Dust :** Malathion 5% dust applied to each bird with duster or by hand. 1 Kg. dust for 60 birds.

#### **Pen treatment**

**Spray :** Malathion 50% emulsifiable insecticide 60 ml. per 4 litres of water.

### **Bumble Foot**

**Symptoms :** Swelling of the underside of the foot often becoming very large. The bird finds it difficult to walk, becomes lame, eats less and lays fewer eggs than before.

**Prevention :** Bumblefoot is quite uncommon but can affect several birds in a flock if the birds are kept on bad litter. Litter full of sharp shives of wood is the main cause of bumblefoot. These shives can pierce the foot and cause an infection. Purchase litter that does not contain sharp objects or cleaning such litter before placing in the chicken house will help to avoid this disease.

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**Treatment :** Cut open the wound, remove the cheesy material and wash the wound, with a disinfectant. Isolate the sick bird for a few days giving it antibiotics in the water or even an injection of antibiotics to prevent further infection.

### **Debeaking**

The only sure way of preventing cannibalism is debeaking of all the birds. Debeaking is the removal of at least one half of the upper and one third of the lower beak. It is most easily done at around 8 weeks of age. However, if cannibalism develops before this age, debeak immediately before the vice has a chance to become established.

**Method :** Cut atleast one half of the upper beak with a slight angle towards the base of the beak (slanting towards the head of the bird) and one-third of the lower beak (straight vertical cut). If less than one half is cut off, the beak will grow back and debeaking will have to be repeated again later on.

The cutting may be done either with an electric debeaker or with a pair of scissors. The advantage of the electric debeaker is that the cutting blade is heated so the wound can be cauterized while cutting is done with a separate piece of red hot metal. Cauterization serves to stop bleeding and to prevent infection of the wound. Recovery from debeaking is almost immediate and birds start drinking and eating a few minutes after debeaking. Never-the-less, debeaking and the handling of the birds is a stress and they should be given antistress medicine 3 days before and 3 days after debeaking.

Here are the advantages of debeaking :

- (1) Prevents cannibalism.

- (2) Results in a more uniform growth in the flock by giving weaker birds a better chance against more aggressive birds.
- (3) The flock is quieter, less nervous.
- (4) Feed wastage is reduced because debeaked birds cannot "bill" feed out of the feeders.
- (5) Feed conversion is improved because birds cannot pick and choose from the mash and also because they eat more slowly.

## Vaccines and Vaccinations

Vaccines can be obtained from S. Shanmugham, Superintendent, Institute of Veterinary Preventive Medicine, Ranipet, Tamilnadu, or the Director, Biological Division I.V.R.I., Izat Nagar, U.P. The vaccine is freeze-dried and is sent by registered parcel. Cost of the vaccine has to be remitted in advance. Results with this vaccine have been excellent while there has been some difficulty both in the effectiveness and supply of wet vaccines.

Vaccinations are done by the Veterinary Surgeon, Mobile Unit, which is located at the Veterinary Hospital in Calicut and Palghat. The Veterinary Surgeon should be contacted well in advance of the actual vaccination.

The Veterinary Surgeon, Mobile Unit, is required to vaccinate birds only if there are a minimum of 50 birds in the flock. (Director of Animal Husbandry, Trivandrum, No. L. DIS. 19542/66/Stores). If there are less than 50 fowls they have to be taken to the Veterinary Hospital. This of course, is not practical. If there are fewer than 50 fowls in the flock

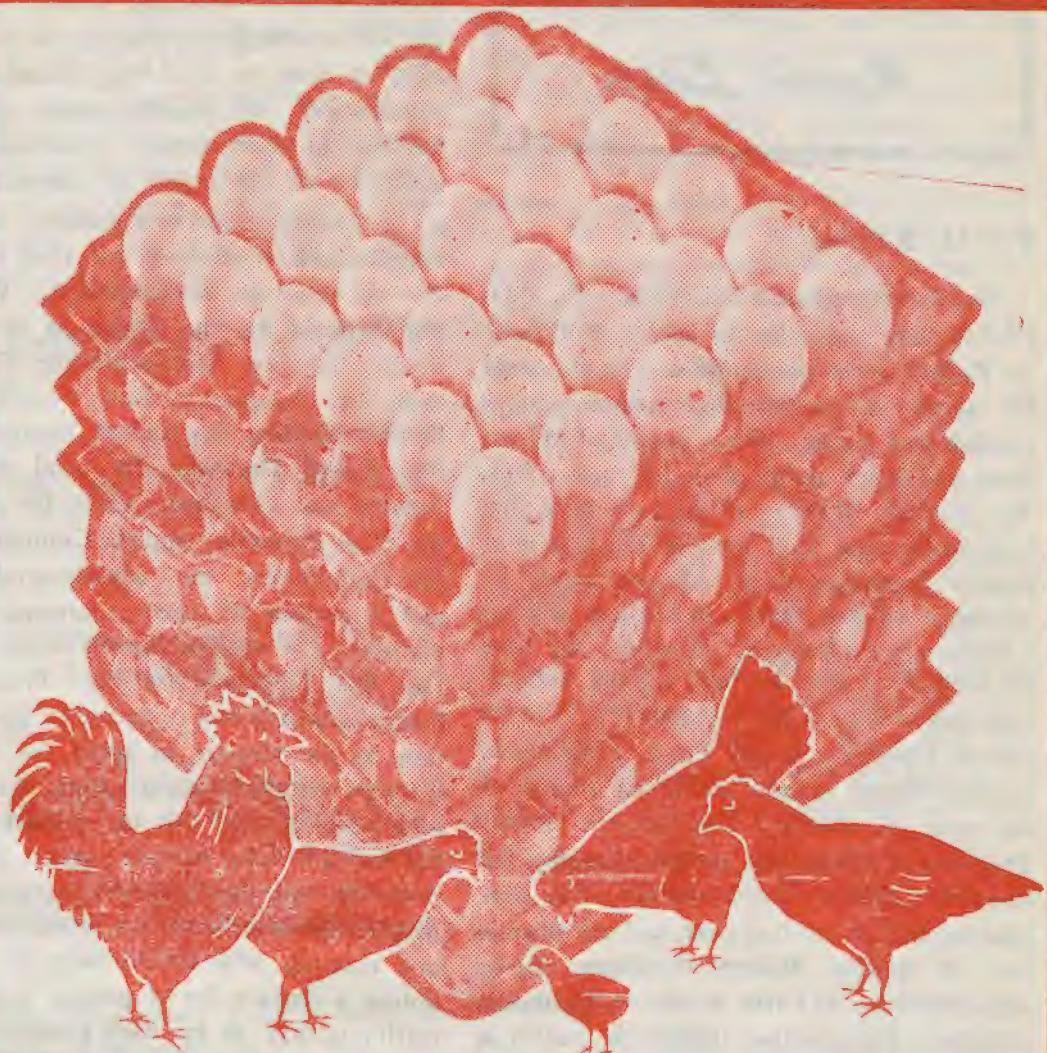
the farmer must do his own vaccination or request the Veterinary Surgeon to come in his off-duty hours, for which the farmer has to pay.

Flocks are Vaccinated four times (1-5 days, Ranikhet-F1 strain ; 14 days, Fowl Pox-Pigeon Pox Virus ; 6 weeks-Fowl Pox ; 12 weeks-Ranikhet Disease). Flocks are dewormed 10 days before Fowl Pox and Ranikhet Disease and given "Poultry Formula" (antibiotic) for 3 days before and after the vaccinations.

Until now the above procedure for vaccination has been followed. However Pigeon Pox Virus Vaccination can be omitted unless there is incidence of Fowl Pox in the area. Also, Fowl Pox and Ranikhet Disease Vaccinations can be given at the same time. Do this as follows : Combine Fowl Pox and Ranikhet Disease freeze-dried vaccine by mixing 1 ampoule of Fowl Pox and 1 ampoule of Ranikhet Disease vaccine with one cc. of 50% glycerine saline and vaccinate by wing web prick method. In this way the birds are only handled once, reducing stress, work and cost for antibiotics.

**Medicines:** We believe it is best to put medicines in the water. Usually birds go off their feed at times of sickness and stress, but they still continue to drink water. Putting medicines in the water ensures that they will take it into their system quickly. It is also easier to mix medicines with water than the feed. **USE MEDICINES VERY CAREFULLY AND FOLLOW DIRECTIONS EXACTLY.**

[Next Month : Marketing]



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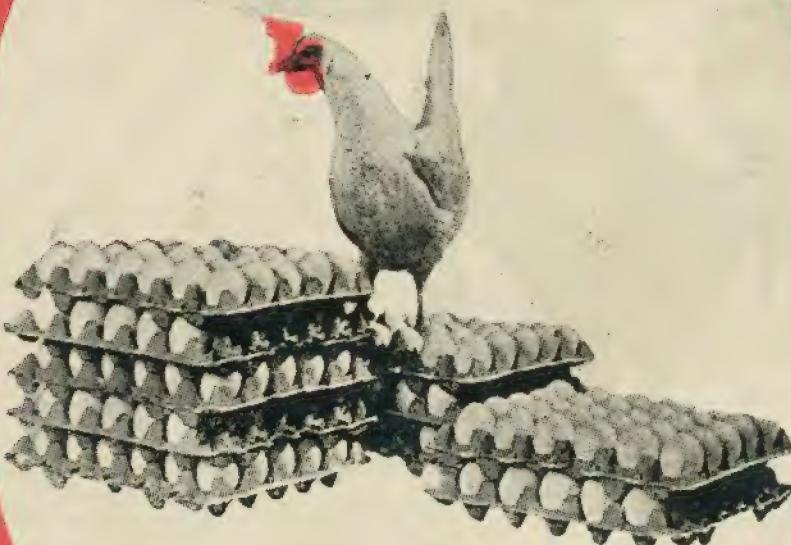
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—Editor

## M A R K E T I N G

### Is there a market for eggs?

This is the first question a potential farmer must ask long before even entering the poultry business. Only if he is sure that the eggs can be sold (locally or exported to other areas) should he plan to start a farm. Local markets should be explored first. A farmer is more likely to make a good profit if the eggs do not have to be transported too far and especially if he himself can sell the eggs eliminating the middleman. It should be kept in mind that no matter how well a farmer looks after his fowls he will fail unless the eggs can be sold for a good price. For a farmer who runs his business well and produces a quality egg, it is a matter of pride to get a higher price for his eggs than eggs usually sell for in his area.

### Offer a quality product?

1). **Fresh eggs!** Eggs must be collected from the chicken house 4 times a day and stored in a cool place (not in a refrigerator) immediately after collection and cleaning.

(2) **Clean eggs :** When collecting the eggs check the nesting material in the nest boxes, it must be clean. Eggs are easiest to clean just after they have been laid. Wipe each egg with a damp (not wet) cloth and then dry it immediately with a clean, dry cloth. Do not wash the egg by putting it in water.

### Advertise the egg

If the farmer wants to get a premium price for his eggs (and he should want to) the eggs must be in some way special and superior to other eggs in the market. Above, the superior quality (fresh, vegetarian, clean, etc.) of the eggs of a progressive farmer, was pointed out. This fact must now also be made known to the public. This can be done rather inexpensively (but it does cost *some* money) through an advertising campaign. Here are some suggestions on advertising :-

1.) Through the mail : Print a handbill pointing out the superior quality of the egg and that nothing like these vegetarian eggs is available anywhere else. The name of the farmer, the name of the outlet, and the price of the egg also must be given. Send this handbill to all people in the area who are likely to spend a little extra money for a superior product, (Doctors, Lawyers, Businessmen, good hotels, Rotarians, Lions, etc.). Send the handbill through the mail by book-post. The remaining handbills can be distributed to the public. (A thousand handbills will cost about Rs. 25)

2.) Place a concise advertisement about the eggs, where available, and for what price in a local newspaper once or twice a week for several weeks. (About Rs. 5 per insertion depending on the circulation of the paper.)

*[Next month : record keeping]*

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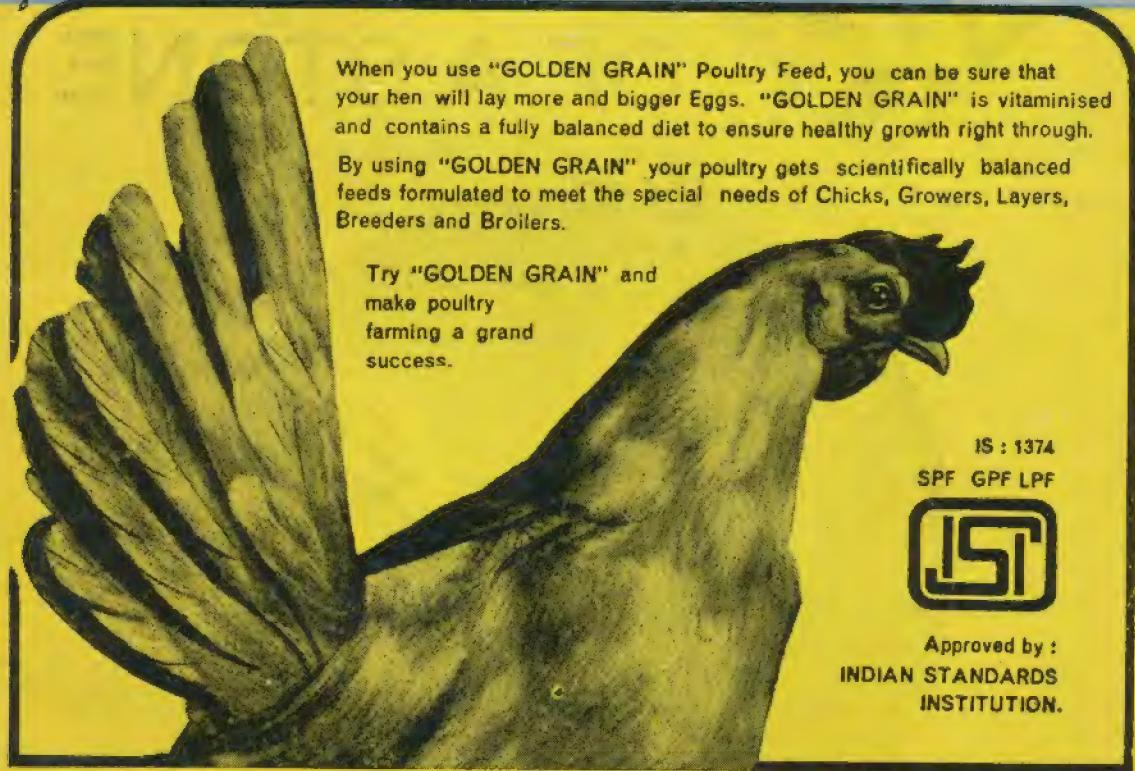
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...YEAR AFTER YEAR

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### ★ PLACED FIRST

Highest Net

Income

United States

Random Sample Test

★ WE WON in 1965 and were  
not satisfied

★ WE WON again in 1966 &  
hoped it wouldn't spoil us

★ Now we've done it again in 1967 and  
don't quite know what to say.

## THREE - WINS - IN - A - ROW

The International participants in  
the race were Arbor Acres, Babcock,  
Dekalb, H & N, Hy-Line, Kimber etc.

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# FOR THE BEGINNER .... X

by

**Richard Masterson & Michael M. Pannwitz.**  
American Peace Corps Volunteers.



*This is the Tenth and the concluding article in the series which were being published every month. These were written by the Peace Corps Volunteers according to the conditions in Malabar, but hold good for almost the whole of India. The views expressed by the authors are not necessarily shared by us. —Editor*

## RECORD

Record keeping is one of the most important requirements for a successful poultry farmer. Unless continuous and accurate records are maintained daily, the farmer will not know whether he is making a profit or not. Only the records can tell the farmer whether he is looking after his fowls properly or not.

### Records to Keep :

1. Number of fowls on the farm, daily.
2. Feed consumption, daily.
3. Egg production, daily.
4. Age of fowls, in weeks.
5. percent production, calculate on a weekly basis.
6. Ideal % production. (as a comparison to number 5, the actual production)
7. Expenses, all must be recorded
8. Income, all must be recorded
9. Remarks, (note all unusual conditions, cause of death, medication given, vaccinations, and anything special done.)
10. Vaccination programme, when and what vaccines were given
11. Deworming programme, to ensure that

## KEEPING

the monthly deworming has been done)

### What to learn from the records :

By keeping daily expense and income records the farm's financial position is always clear.

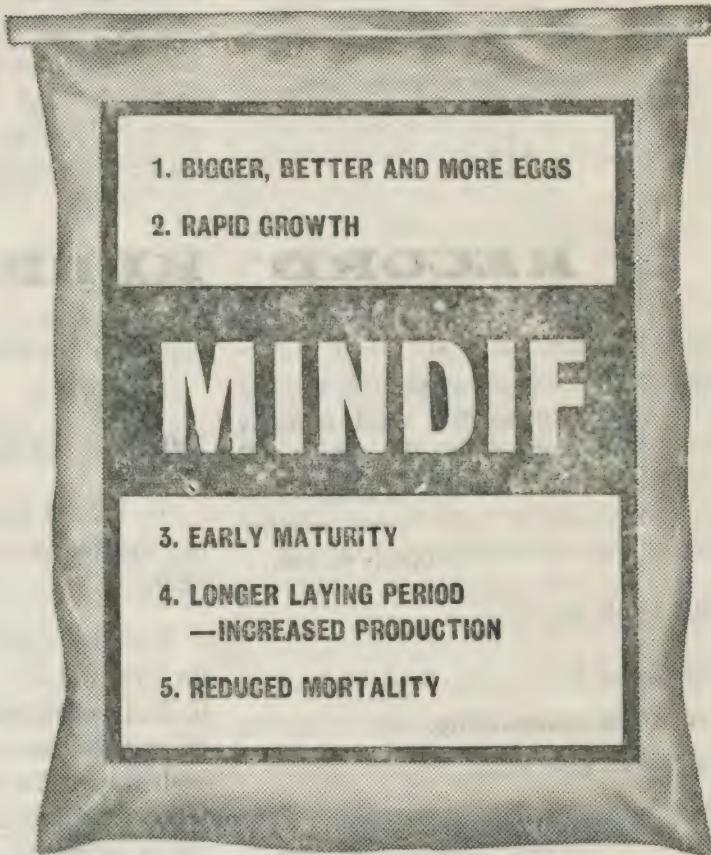
Keeping daily feed-consumption records, the farmer always can tell when trouble starts. If feed consumption suddenly drops (which can only be observed if records are kept) the fowls may suffer from worms, or coccidiosis, or from too much heat. Corrective measures can be taken and drastic egg production drops (loss of money) can be minimized. A sudden increase in feed consumption can indicate waste, theft, or rodents in the poultry house.

Keeping daily egg production records (and weekly egg production percentages) the farmer can compare the performance of his flock with that of the ideal. If there are great differences (especially if egg production drops below 60%) corrective steps (culling, medication, etc.) can be taken quickly and loss of income minimized.

Without records the farmer will never improve his efficiency. **KEEP RECORDS THEY HELP YOU TO MAKE MONEY !**

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## SAMPLE RECORDS

Date 1968	Age	Fowls	Feed (Kg.)	Eggs	%	% Ideal	Remarks
Sept. 6		188	22.5	134			
7		188	51.4	130			
8		188	22.0	137			
9	44	188 *187.6	22.7	133 * 135	72	79.5	1 bird culled (non layer)
10		187	21.8	133			
11		187	22.2	138			
12		187	21.9	140			
13		187	22.0	141			
14		187	23.0	142			
15		186	21.7	130			
16	45	186 *186.3	21.8	137 * 136	73	79	1 bird culled (non layer)
17		186	22.2	133			
18		186	22.7	130			
19		886	22.1	139			

DATE=actual date

AGE =Age of fowl expressed in weeks

FOWLS=Actual number of fowls (numbers marked asterisk show average daily fowls in that week).

FEED=Feed (in Kgs.) given to the fowls that day.

EGGS=Number of eggs laid that day (figures marked asterisk show daily average number of eggs per day).

% =“average daily eggs” divided by “average daily fowls” multiplied by 100 gives the % egg production.

% IDEAL=Shows what production is obtained under ideal conditions. Ideally the fowls will start to lay with at 6% rate in the 23rd week, and increase at the rate of 12 percentage points each week. Egg production will then increase to 84% in the 30th week and reach its peak of 86% in the 31st week. For the next 34 weeks, egg production will drop  $\frac{1}{2}$  percentage point per week, to 69%, in the 65th week. From the 65th week onward the drop is 1 percentage point per week to 60% in the 74th week, at this point the fowls should be sold for table.

Don't expect your fowls to produce that well. Experience has shown that hybrid fowls perform very close to ideal, or even better until the 31st week, (the peak week, 86% production) but then drop off more quickly than the ideal and steady out around 70% until the 54th week. After the 54th week, egg production

fluctuates between 60% and 66%. Production should stay above 60% all the time after the fowls have reached their peak (31st week). If production drops below 60% check what is wrong. After the 62nd week more thorough culling is necessary to keep the production above 60%.

**REMARKS**=Record any unusual circumstances (debeaking, sudden change in weather, culling); death of fowls and reason for death; vaccinations; medication, (especially monthly deworming); etc. This will be valuable for future reference. Steps taken under certain circumstances (disease, drop in egg production, etc.) should be recorded together with an indication whether the steps taken proved successful or not. If these circumstances recur the farmer will then know from past experience what to do. Records used this way will improve the efficiency of the farmer.

*CONCLUDED.*

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